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ESSAYS AND CASES.

Art. I.—Epidemic Cholera in Indiana.

Brief Remarks on Epidemic Cholera as it appeared in Versailles, Indiana, and its vicinity, in the summer of 1833. By W. T. S. Cornett, M. D.

In order that the treatment of this terrible scourge of the human family may become certain and settled, it is necessary that those of the profession who have seen, and treated the disease, should give to the public the result of their observations, even at the expense of being tedious. We have all read of Cholera until we are weary of it. The bare caption of an article on that topic, is almost sufficient to bring on a fit of ennui, but the advancement of science, the mitigation of human suffering, and the credit of the profession, all demand patient investigation at our hands. The accounts of the *methodus medendi* in this disease are still, as heretofore, various and conflicting, and calculated to leave in confusion the minds of those who have never as yet seen and treated the disease for themselves. Under these considerations, I am induced to lay before the profession a very brief account of the treatment practised by myself, with its results. The epidemic which commenced here in June last, was preceded for several weeks by bowel complaints, which yielded readily to a few doses of

calomel and opium, confinement to bed, fomentations to the abdomen, &c. During the prevalence of the epidemic the digestive organs of nearly all the inhabitants were more or less affected. Those who were not afflicted with Diarrhœa, complained of uneasiness at the stomach, such as is experienced from indigestion, and occasional pain in the bowels. After eating, the aliment would remain for a time in the stomach, undergoing but slightly the process of digestion, and then be expelled through the pylorus with a gurgling noise, leaving a sense of vacuity in the stomach, and a disagreeable sense of sinking in of the præcordia. This feeling in many was accompanied by instinctive desire for something stimulating, either in the way of drink or condiment. I frequently observed when standing in a crowd of men in the streets, borborigmi in the bowels of the whole company, so audible as to attract general attention. An apparent purging would commence frequently, in the upper tract of the bowels, so as to induce the belief that diarrhœa was commencing, but this action extended in many instances, no farther than the ileo-colic valve. A number with whom I conversed, complained of double vision. This phenomenon occurred indiscriminately, with those laboring under the disease, and also with persons who experienced no attack.

The crude vegetables of the season seemed to be inappropriate articles of diet, the stomach being entirely incapable of digesting them. I have seen green apples, snap beans, &c. vomited up, having remained four or five days in the stomach without alteration in appearance.

The disease was in most cases preceded by diarrhœa, but not uniformly. Some of the worst attacks were sudden as an electric shock, without any premonitory symptoms whatever, save indigestion, and a sense of purging in the upper tract of the bowels. Having made these preliminary observations I shall proceed at once to a summary of the treatment which proved most successful in my hands; and in short, I may say, that from an extensive practical experience in this disease, calomel in large doses is the only remedy, which has proved succesful

in my hands. I was led at the onset of this disease, to an apparently extravagant use of this article, from the entire suppression of the biliary and other secretions. At first, I used opium in conjunction with calomel, with the view of restraining the watery evacuations from the intestines, but soon ascertained that calomel alone was sufficient, when given in proper doses, not only to restore ultimately the lost secretions, but at once to arrest the diarrhœa, and save from the impending collapse. I therefore abandoned opium as useless, and saw some cases in which it was manifestly injurious. I commenced the treatment in most cases with an emetic, with a view of clearing the stomach of all crudities; for which purpose I used common salt, and mustard, or the latter alone. This emetic always acted promptly, and possessed the advantage of not producing that debilitating nausea common to the antimonial preparations. I then commenced giving calomel, in doses of from 50 to an 100 grains, every hour or two, until diarrhœa was arrested; then the dose was reduced to 25 grains every two hours, until ptyalism was effected, which was always followed by a restoration of the secretions in general, when the patient was out of danger. I will here remark, that out of largely upwards of an hundred cases, I lost but one patient who had sore mouth, and that was dry inflammation of the gums, perhaps a local affection, as the breath was destitute of the mercurial fætor. I made it a rule in nearly all cases, to push the mercurial course until salivation was brought about, after which, I saw no death, no relapse, nor any case of intractable sore mouth. Indeed, I can safely say, that salivations produced with those large doses of calomel, are more mild, and sooner cured, than those effected with smaller quantities. After having arrested diarrhœa, and reduced the calomel to 25 grains every two hours, if it returned, I immediately increased the quantity, until the intestinal effusion was again arrested. There is a constant tendency to a return of this symptom until the secretions are restored, and it should be strictly watched, and immediately counteracted when it occurs. Upon this depends the success of the treatment. The intes-

tinal effusion is the chief cause of the collapse, and when this is held in check, there is no fear of immediate death. I used blood-letting and blistering in some cases, but with no marked good effect. When spasms were present, I found advantage from large sinapisms to the extremities and epigastrium. The mustard emetic was the most valuable remedy for cramp, acting in most cases like a charm, driving the circulation to the surface, and completely throwing off the spasms. I used many auxiliary means in the earlier part of the epidemic, but soon abandoned them as useless. Calomel—and calomel alone, is the great *sine qua non*, in the treatment of this disease; and will, when properly administered, cure 49 out of 50 cases, without auxiliary treatment. This remark is not carelessly made, but with entire confidence in its truth, derived from careful observation at the bed side. Out of largely upwards of an hundred cases, I lost ten, eight of whom were not seen until a late date. Least it should be judged that the disease here was unusually mild, I will remark, that at the Cross Plains, a village nine miles south of Versailles, every case terminated fatally, until the above practice was adopted at my instance; after which, not a case was lost, where the treatment was early resorted to. For the truth of these remarks I can confidently appeal to my fellow citizens, many of whom, instead of being afflicted with that panic which prevailed so generally in many places, labored day and night in nursing, and also in prescribing with equal success, when medical aid was not to be had.

To recapitulate. Calomel is to be given in such doses as will arrest the diarrhœa, without regard to quantity: the doses may then be diminished, but should be continued until ptyalism is effected, after which, there is no danger of relapse. This should always be brought about. Who would not prefer a sore mouth and safety, to the risk of a relapse and its consequences? I have seldom seen the secretions properly established until the mercurial impression was made. There is no telling, (*a priori*,) the quantity of calomel that will be required. In some cases I have been under the necessity of giving the

fourth of a pound;* whilst in others, a much less quantity was sufficient. It is given to answer certain ends, and those ends must be answered, take what quantity it may. Where children were afflicted with the disease, I found it more difficult to make the mercurial impression. In those cases, frictions along the spine, with the Ungt. Hydrarg. will be found a valuable auxiliary.

May, 1834.

Art. II.—Alcohol in the Materia Medica.

Remarks on the question "Is Alcohol an indispensable article of the Materia Medica." By Edwin A. At Lee, M. D.

The praiseworthy efforts of the patriotic, the moral, and the pious of our country, for the extinction of *Drunkenness* and its host of evils, have given importance to this question, claiming the serious, deliberate consideration of Practitioners of the healing art, who are at all times ready to co-operate with their fellow citizens, for the promotion and establishment of good order, and national happiness: our object, professionally, is the preservation of "*a sound mind in a sound body.*" And in order that the general movement of the phalanx, or rather army, of *Temperance*, may be harmoniously onward, it is desirable that *our* views and practices on this subject may coincide, so that we may walk by the same rule, and thus our opinions, when either privately or publicly advanced, may tend in some degree to obtund the shaft of sarcasm—which has been *too little* blunted by time:—

—"*Who shall decide when Doctors disagree?*"

It appears that many Physicians of reputation have arrived at the conclusion, and consistently express their sentiment

*Calomel has no tendency to act as a purge in this disease until the secretion of bile is restored.

without qualification, that *Alcohol*, either alone, or in any of its modifications, is altogether needless, in a remedial view; and even that it has been much more injurious than beneficial.

A considerable number, doubtless equally respectable with those just mentioned, are yet unprepared, either from theory or experience, to commit themselves in so unqualified a manner, being confident, that in their practice, alcoholic preparations have been signally useful in a variety of diseases.

I acknowledge myself to be too much inclined to the sentiment of the latter class of Practitioners, and on this account am desirous of eliciting the opinions of my brethren, who may convince me of the existence of substitutes hitherto beyond the limits of my knowledge, that may answer all the indications of treatment, in which recourse has generally been had to the article in question, and that may, in the hands of Physicians much more judicious than myself, have had more prompt and happy effects.

From the sensible qualities of alcoholic preparations, we would, *a priori*, be of the judgment, that they ought to be potent remedial agents, especially in diseases of an *asthenic* type. Experience seems to have fully sanctioned and confirmed such judgment, since the pharmaceutical uses of Ethers, Tinctures, Extracts, Aromatic sulphuric Acids, &c. &c. are neither few nor of recent origin.

It is no valid objection to the proper use of this article, that the excessive use, even with reference to its therapeutic agency, has proved deleterious: the same objection lies against the administration of a great number of valuable remedies, the virtues of which are sufficiently tested and approved.

That we may the better determine relative to the merits of Alcohol, let us, without analysing it chemically, examine its medical properties, as set forth in the U. S. Dispensatory; viz: "Acohol is a very powerful stimulant. It is the intoxicating ingredient in all spirituous and vinous liquors, including under the latter term, porter, ale, and cider, and every liquid in short which has undergone the vinous fermentation. In

its pure state it is never used in medicine, but diluted to various degrees, it forms the menstruum for many remedies. In a diluted state, and taken in small quantities, it excites every part of the system, renders the pulse full, communicates additional energy to the muscles, and gives temporary exaltation to the mental faculties. In some states of acute disease, characterized by excessive debility, it is a valuable remedy. In the form of brandy it is frequently given in the sinking stages of Typhus with advantage. Other kinds of ardent spirits are occasionally administered, and each is supposed to have its peculiar qualities. Thus, according to Dr. Paris, brandy may be esteemed simply cordial and stomachic; rum, heating and sudorific; and gin and whiskey, diuretic. Physicians ought to be on their guard not to prescribe alcoholic remedies in chronic diseases, whether alone or in the form of tincture, for fear of begetting habits of intemperance in their patients. Externally alcohol is sometimes applied to produce cold by evaporation, or to stimulate when evaporation is repressed."

Now, from this enumeration of the properties of the subject in question, I apprehend that every unprejudiced Physician would hesitate in expunging from his list of remedies one so manifestly calculated to do good, and withal so manageable as alcohol is known to be; until he should have, at least, presumptive proof, that for every case in which this remedy has been administered with benefit, there exists some adequate article within reach as a substitute, and at the same time not likely to entail upon his patients, those evils and deplorable consequences, too permanently affecting their health, morals, and happiness.

But where, in the Materia Medica, shall we find so general an excitant of the languid system, communicating fulness to the debilitated pulse, and energy to the prostrated muscles? I ask for information, and will most cordially adopt the remedy, whenever I shall become acquainted with it.

Is *Opium* the substitute? Its virtues, which have been appreciated from the days of Hippocrates, seem calculated to

answer all the indications for which alcohol is administered, and in addition, by its direct action on the nervous system, has a powerful effect in diminishing sensibility, irritability, and mobility. It also induces tranquil and refreshing sleep, or at least drowsiness, which evidently recruits the wasted energies of the patient. It is thus a sedative, in the proper sense of the term, judging by intent, purpose, and effect. Independently of this last important and highly sanative property, opium may be made to act as a stimulant, more certain and universal than alcohol in any of its modes.

Yet, numerous as are the benefits to be derived from the proper *use* of opium, it is undeniable that evils of magnitude result from its *abuse*, not only as a narcotic *poison*, taken or administered *as such;* but also by its *habitual* use, as an allayer of pain, a reliever of spasm, and a direct tranquilizer of the troubled mind, in which last respect, though not so immorally injurious, it is more extensively so than alcohol, being resorted to by many in the higher grades of society, as well as among the indigently wretched, and with little risk of exposure for perhaps a long series of years.

It is, however, in my opinion, demonstrable, that the *juvantia* derivable from this article, do far exceed the *lædentia*—and that therefore Practitioners will very reluctantly, if at all, consent to deprive themselves of it. But may not the *alcoholic* menstrua of opium be altogether superceeded by the *aqueous* and *acid?* It is not improbable that decoctions of theP oppy, together with the preparations of Morphia, in which its narcotic principle is said to reside, especially in composition with decoctions and essential Oils of plants of the order of *Piperitæ*, and with rubefacients, may eventually enable us to dispense with alcohol in every form.

It may have been discovered that I view opium as the chief supplanter of alcohol; but notwithstanding it may be in this respect, *ipse agmen;* yet it does remain a desideratum to obviate, or neutralize, some of its potent mischiefs, by sedulously selecting from our therapeutic treasury, on all occasions which may authorize us, those lesser agents, which,

either singly, or in concert, may effect our wishes: for example,

As *Antispasmodics*, we have Musk, Castor, Ammonia, Asafœtida, Galbanum, Valerian, &c.

Among the *Diaphoretics*, are, Camphor, Ipecacuan, Ammonia, Calomel, Sarsaparilla, Serpentaria, Salvia, Zingiber, and many others.

The *Rubafacients*, are, Sinapi. Capsicum, Zingber, Pix Burgundica, Spt. Terebinth. Ol. Monard, Punctat.

As *Soporifics*, Hyosciamus, Datura Stramonium, Humulus Lupulus, &c.

For *Stimulants*, there are Peppermint, Herb Mastich, Sweet Majoram, Pennyroyal, Thyme, Monarda P.

For *Sedatives*, Cold Water, *plaintive Music*, &c.

For *Astringents*, Galls, Pomegranate, Rhatany, Catechu, St. John's Wort, and others.

The above classification seems to comprise articles having all the properties, for which both alcohol and opium are celebrated. I know not but that some may smile at the introduction of *Music* into the list of remedies; but I am persuaded that it merits a high rank among them, as capable of "ministering to a mind diseased;" and had I the control of a *Hospital for the insane*, I should think myself culpable, if I omitted a special provision for the introduction and scientific administration of that almost supernatural agent.

EDWIN A. AT LEE.

Philadelphia, February, 1834.

Art. III.—Botanical Specimens.

Particular Directions for Collecting and Preserving Specimens of Plants, extracted from an unpublished treatise on Practical Botany. By John L. Riddell, A. M.*

Those who are about to make a botanical excursion, are generally recommended to provide themselves with a tin box, near 18 inches long and 6 wide, which some have termed a *vasculum*. Such a box, being impervious to moisture, and an excellent reflector of the light and heat of the sun, is admirably calculated to preserve flowers and leaves in a perfect state of freshness, for a very considerable time. If a few delicate specimens only, occupy the box, they will be sure in a short time to languish or become crisped, unless we take the precaution to accompany them with a liberal quantity of very damp moss, or something equivalent to it. For the exhalation of moisture from the leaves and flowers, continues so long as there is moderately dry air in the box to receive it; and as

*Every day diminishes the number of individual specimens, and, perhaps, every year annihilates several species of the plants indigenous to the Valley of the Mississippi; it is, therefore, a matter of the deepest interest, to direct the attention of our people to the study of Botany. This we have more than once attempted to do, by reviews, notices, and exhortations, in this Journal; but with no very encouraging success. As a means of rousing up our students of medicine, and young physicians, many of whom (like some of their seniors) have occasionally a little leisure on hand, we insert the following extract from the work which Mr. Riddell proposes in due time to lay before the public. We hope he will append to his practical directions, a catalogue of such of the plants of the State of Ohio, as may have fallen under his observation. He is, we feel assured, a sound practical Botanist, who may, perhaps, do for Ohio, sooner or later, what Professor Short is zealously laboring to effect for Kentucky. By the way, why does not the Professor bring out the Flora, for which he must have on hand such ample materials? Its publication would do more to *promote* the study of Botany in the basin of the greatest of rivers, than a thousand of our paragraphs. Editor.

the plants can no longer suck up fluids from the earth, they become exhausted by the immediate loss they sustain.

Although some esteem the vasculum very highly, and employ it exclusively in their herborizations, for myself I disagree with them in opinion, and give my decided preference to the *port-folio.** I shall hereafter assign some of the reasons which have influenced my choice.

The following articles will be found subservient to the prosecution of our object.

1. A common mason's *trowel.*† This, or an implement somewhat similar to it, will be found almost indispensable, for procuring herbaceous plants by the roots; which should never be neglected when it can conveniently be done. When one preserves small specimens merely to assist the memory in recognizing and distinguishing species, the roots may generally be dispensed with. But an herbarium designed for scientific reference, would indeed be *radically* deficient, if it did not comprise the roots of most herbaceous plants, preserved, either entire, or in thin sections. As to the roots of trees and shrubs, they are so little diversified in character, and withal so unmanageable on account of size, texture and situation, that we must generally remain contented to leave them undisturbed. The trowel is equally useful and more convenient, if rather smaller than the usual size. As a substitute for this instrument, one may use a butcher's knife, with a broad blade and dull edge.

2. A sharp *Jack-knife;* for trimming specimens, cutting them of the proper length for the port-folio; making sections of thick roots, coarse fruits, capsules and the like, and for lopping off the branches of trees.

3. A small sharp *pen-knife*, or *surgeon's lancet;* for making dissections of flowers.

*If a person were riding through a country, in such haste that he had not time to place his specimens properly in a port-folio, the vasculum would undoubtedly be preferable.

†"Also a *bill-hook*, fitted to screw into a cane."
Practical Naturalist.

4. A *portable volume*, containing brief descriptions of the plants which will probably be met with in the excursion. The more local a manual of descriptive botany is, the more convenient will it be found in the particular region to which it has been adapted. In other words, the student will find it more difficult to determine the names of plants with which he is unacquainted, in proportion to the extended number of species among which he has to decide. Dr. L. C. Beck, in his accurate work on botany lately published, gives descriptions of the plants indigenous to the Northern and Middle States. Professor Eaton's Manual, 6th Edition, includes all the known indigenous species, north of the Gulf of Mexico, and many cultivated exotics. This book, from its being so portable and comprehensive, will doubtless be found more convenient to students of botany in the Western States, than any other volume extant. As yet we have no separate Flora of western plants.

5. *Magnifying glasses;* for aiding in the analysis of plants, by rendering the organs in minute flowers more obvious and easy to be examined. An instrument possessing a magnifying power of 10 or 12 diameters, will be amply sufficient in nearly all cases. Indeed, in most instances the eye will not require the help of glasses. The student would do well to purchase either the common magnifier, which consists of three lenses put up in horn; or the very convex, single lens, mounted in brass, and accompanied with little forceps.

6. *Pencil* and *paper* for labelling.

7. When on any considerable excursion, one should be provided with a *note book*, pen and ink.

8. A *bag* of pliable *oil cloth*. It should be nearly two feet square. To make it, would of course require eight square feet, or nearly a square yard of cloth. Brown Holland, or very strong silk, is a good material to make one of. After having been drawn smooth and secured, in a situation where the sun's rays can have access to it, it should receive two or three successive coats of drying linseed oil. After becoming dry, it may be sewed into a bag, the opening or mouth of

which, like its width should be two feet. Perhaps the cloth should be black, in preference to a lighter color. The particular hue is a matter of very little importance I imagine, for though dark colors will exclude more of the sun's light, they are much better adapted to receive radiant heat from the same source, than lighter ones.

The oil cloth bag if well made, is exceedingly useful. It receives the specimens when first collected, where they will lie perfectly secure for a considerable time, as in the vasculum. It possesses some advantages over the latter apparatus; viz. Its capacity may be easily graduated to its contents. When not in use it may be folded up and stowed away in a pocket, or in the port-folio; while the dimensions of the tin box will admit of no such abridgment. On the other hand, though the oil cloth effectually prevents evaporation, it does not entirely exclude the influence of the sun. But this will seldom become a source of evil, for when the collector has procured a sufficient number of specimens, he will seat himself in a convenient place and transfer them to the port-folio.

While travelling, one may keep plants fresh in an oil cloth bag, from 10 to 30 hours; in a tin box for a number of days. Should a deep river oppose the adventurer's progress, he has only to tie his equipments and clothing snugly in the impervious bag, attaching a few feet of string to it, the end of which he will hold in his mouth, and like a bold and experienced swimmer, commit himself to the embrace of the waters. Should showers of rain meet him at a distance from human habitation, the oil cloth serves to protect his plants, and books, and other articles from injury.

9. A *port-folio.* This should be a large morocco, or leather bound book, containing a quantity of soft bibulous paper. The most eligible dimenions are 15 or 16 inches in length, by 10 or 11 in breadth, measuring when the book is closed. Soft wrapping paper, or common printing paper, is a very good material for the leaves, which should be near 150 in number; thus making a book of about 300 pages. The covers should contain moderately stiff binder's boards, and the whole

should be put together after the manner of a full bound book, with certain modifications about to be mentioned. The back should be near twice the thickness of the front part, and this perhaps can be most neatly accomplished by first making a book of 600 pages, then removing one half of the leaves with a knife. To a flap of leather, extending from one of the covers, after the manner of a pocket-book, a buckle is permanently attached, and from this a strap descends and terminates in a hook, which is received into a ring or eye, thus allowing the port-folio to be opened or closed with the greatest convenience. Buckles should also be attached, for the reception of a strap designed to pass over the shoulder.

In this manner the port-folio can be carried with the greatest ease and convenience, while the plants will be completely protected from that mischievous compression, which they would be liable to suffer if carried under the arm.

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The port-folio is not designed for drying plants; only for safely keeping them while on an excursion. Indeed, if plants are to be retained some three or four days in the port-folio, it is nearly always an essential object to prevent their drying.

If small specimens only are required, the port-folio may be of a size correspondingly small. It is hardly necessary to add that a large printed volume, or old account book may be used as a substitute.

Directions for placing specimens in the port-folio. I shall be considerably minute and explicit in my advices on this point, for on the skilful accomplishment of this mechanical part, depend in a great measure the beauty and usefulness of an herbarium. Having selected the requisite number of the most perfect specimens to be found, and having washed or beaten the earth from the roots, the botanist is to seat himself as comfortably as circumstances will permit, and proceed to cut down the larger plants to proper dimensions, remove tuberosities from the roots and stem, divide compound flowers,

&c. in the manner hereafter to be pointed out. The specimens are to occupy a place conveniently within reach on his right. The port-folio is to be opened, and that lid of the cover to which the flap of leather is attached, must be placed on the right knee, the other of course on the left. When thus arranged, the leaves of the port-folio rest on the left lid. A specimen is to be taken in the right hand, and the first leaf of paper in the left; when a flower or any other part of the specimen is placed in a proper position by the right hand, that position is to be secured by bringing the sheet of paper over it with the left hand. The left arm or wrist will now maintain this portion of the paper in place, while the hands are at liberty to adjust other parts of the specimen in the same manner. The second leaf of paper is to overlay the next specimen, and so on until the specimens are all exhausted. Sometimes a pen-knife or sharp stick will be found very convenient, in arranging minutely subdivided leaves, or the parts of complicated flowers. After a little practice, one can put up specimens in a manner perfectly neat, and with a degree of despatch that is almost incredible.

It is usually advisable to place leaves, so that their upper surfaces will all look the same way. If the leaves are small, and the two surfaces very similar in appearance, as in Gerardia tenuifolia, Lythrum hyssopifolium, this particular will need little attention.

If roots are too thick to find a place in an herbal, they may be pared down, or thin sections of them may be saved. It is better to preserve such roots by washing them carefully in the first place, and allowing them to dry in the open air, attaching a name or number to them by means of a needle, strong thread or twine, and a piece of card.

Thick succulent fruits, as the pawpaw, and persimon, are best preserved in spirits of wine; but is is most always advisable to place transverse and longitudinal sections of them in the port-folio. It is certainly very well to accompany the twigs, leaves, and flowers of forest trees and shrubs, with neat sections of the wood and bark. The bark of the trunk may be

obtained with a knife, and the section should be a vertical one, and towards the centre of the tree. The wood is most conveniently procured from a branch of moderate size. Thin sections too, of such capsules as are borne by the Poppy, Nigella, and the like should be preserved.

Dissections of flowers can be rapidly and neatly made, with a small sharp knife or lancet; and they commonly present a beautiful appearance when dry. To prevent the stamens, styles, sections of immature capsules, and other minute parts, from being lost, they should be immediately laid on a piece of fine gummed paper, and placed in the port-folio. The pieces of paper ought generally to be one inch in width and two inches long. The dissections commonly moisten the gum by the juices they contain, and after the whole has been subjected to the drying process, remain adherent. All the organs should be thus displayed upon which generic distinctions depend, as the calyx, corol, stamens, pistil and germ; and in compound flowers, like those of Prenanthes and Helianthus, the aigrette chaff, receptacle and seed. Indeed, thick compound flowers, as those common to the genera Silphium, Helianthus, Rudbeckia, Dahlia, cannot be well preserved without the assistance of the knife. It is commonly necessary to sever one half of the flower by a vertical section, and then to remove a number of the disk florets with the fingers. When thus divided, the flowers are easily adjusted in the port-folio, and when dried are very beautiful and well adapted for reference, exhibiting as they do the generic characters to great advantage. Either side of the mutilated flower may correspond to the upper surface of the leaves, according to the fancy of the collector.

Before roots are placed in the port-folio they should be washed in water, and most of the superficial moisture removed by the application of spare bibulous paper. Marine plants, and aquatic vegetables inhabiting stagnant pools, likewise require careful washing in clean fresh water, and a partial drying as before, ere they can be admitted into the port. folio. At this time the parts of these plants are easily ar-

ranged, and few specimens will exceed in beauty the Algæ, Ceratophylleæ, and Lentibulariæ when properly adjusted.

In regard to the *size* of specimens, all small plants are to be taken entire. Larger ones must from necessity be abridged and divided until the port-folio will conveniently receive them. Take for example a tall plant as the Solidago rigida. One specimen should embrace the root and radical leaves, another the corymb of flowers and the cauline leaves. As to the *number* of specimens, six or eight extras should generally be taken for the purpose of exchanging; and if we meet with plants that are rare, or peculiar to certain localities, a still greater number should be secured.

Having selected and put up the requisite number of specimens for preservation, we are next to set about determining the name from a pocket manual or Flora. A mere glance at the flower will generally enable one to determine the Linnæan class and order, while the neat dissections mentioned above, will materially aid in referring the plant to its genus. In hunting for the specific description, it is seldom or never necessary to read all that is said under each species—but we should avail ourselves of some prominent character which the plant possesses, and with it test each description. Suppose the leaves of our plant to be heart-shaped. Now this circumstance will enable us almost at once to exclude it from all those species that do not possess cordate leaves; and thus our labor will be very much abridged. After we have had some little experience, the names of most plants may be thus determined in a few minutes. The name, locality and date, are to be written on a slip of paper, which is to be placed in the port-folio with the specimens. If any doubt remain as to the correctness of our analytical result, a mark of interrogation (?) is to be affixed to the generic or specific name, as the case may be.

If we have reason to suppose that the plant is unknown to botanists, it is incumbent on us to insert a pretty full description of it in the note book; referring to the specimens by a number. For the sake of system, it is perhaps best to

describe, 1st. The root. 2. Stem and branches. 3. Buds and foliation. 4. Leaves. 5. Appendages. 6. Inflorescence. 7. Calyx. 8. Corol. 9. Stamens. 10. Pistil. 11. Pericarp. 12. Seed. 13. Receptacle.* Then add an account of the size and general appearance of the plant, the points of resemblance it has to well known species, the situation and nature of the soil in which it grows, time of flowering; and as such particulars are generally omitted in the systematic description of the parts above referred to, do not here omit to record the color of the flower, the stem and the leaves; and the duration of the root if it can be determined, whether annual, biennial, or perennial.

Plants should not be subjected to pressure while in the port-folio, for their vitality is thereby the sooner destroyed, and as a consequence they will be likely to undergo some modification in color, detrimental to their appearance, before they are transferred to the press. The plan of carrying the port-folio suspended from the shoulder, is calculated to avoid this unpleasant occurrence.

When a botanical excursion occupies some days, the leaves of the port-folio will probably become filled with plants before we have collected one fifth of the number we mean to procure. In this case we may transfer the specimens to the part of the book first occupied, laying five, six, or more, between every pair of contiguous leaves; and all this engrosses but little time, for the leaves and flowers have now become so stiff, that they retain the relative position in which they were first placed: When thus packed over, they are to be secured by the oil cloth flaps.†

No pains should ever be taken to dry the port-folio, for it is better that its leaves should be moderately damp. When recent plants are to be transported in it a considerable distance, or retained in it a number of days, it is advisable to envelope it closely in the oil cloth bag, in order to prevent the exhalation of moisture.

*** Some prefer beginning with the calyx.**

† The description of which is omitted in these extracts.

Times for procuring plants. As a general rule, plants should be procured when fully in blossom; not only because they are most interesting and beautiful at this time, but for the more substantial reason, that they display those characters by which they are aggrouped into classes, orders and genera. It is better to get specimens of most forest trees at two periods; procuring the flower as it appears early in the season, and the leaves a few days before they attain their full size. No amateur in our science, however, will fail to collect leaves still later in the season, when they are richly variegated with autumnal tints.

The willows are quite numerous in the State of Ohio, and considerable difficulty will be encountered in obtaining complete specimens of them. The catkins appear before the leaves are developed, and when the leaves are mature, the staminate catkins are gone. I would recommend collectors to adopt the following method: Procure the flowers when they appear, and number the tree which yields them, with a knife or other sharp pointed instrument; accompany the specimens with the same number on a slip of paper. When the leaves are mature, collect and number them also. The leaves of the wild poplars may be collected in the same manner.

Compound flowers should be preserved in different stages of maturity, and the required specimens can often be taken from the same plant at the same time. The form of the seed, the nature of the aigrette, the condition of the receptacle, whether pitted, chaffy or smooth, can be determined most satisfactorily in mature specimens, from which the showy ray florets have fallen off.

The seeds and glumes of grasses are likewise required to be considerably advanced. All umbelliferous plants, as the dill, angelica and parsnip, should be gathered for preservation when the seed approaches maturity. It will certainly be well to preserve the recently expanded flowers if conveniently obtained, and they may frequently be found on the same stalk with the full grown umbel; but the mature seed is altogether

most important, since the distinctive characters of umbelliferous genera, are mostly drawn from the furrows and ridges which variegate its surface.

Ferns are to be collected whenever the *sori* or fruit dots on the back of the leaves* are fairly developed. They are generally met with in this condition during summer and autumn, though a few hardy species as Aspidium marginale, A. acrostichoides, Pteris atropurpurea, are met with in the winter. Mosses are to be put up when their *thecæ* or little elevated urns have attained maturity. They will be found in some situations at all times of the year, but the greatest number will appear during damp weather late in autumn. The sprigs should be separated considerably, before being placed in the port-folio. Lichens are found most plentifully in swamps and in shady ravines, on trees and on rocks; and damp, cool weather is peculiarly favorable to their growth. Hence after a cold rain-storm late in autumn, they literally clothe the trunks and branches of trees, and also spring up luxuriantly from the earth. Whenever they bear a *thallus* or receptacle, resembling in form a button, a shield, a knob, or a cup, they may be admitted into the port-folio.

It often happens that the radical leaves (those springing from the root) of phenogamous plants possess a form and appearance different from those growing on the stem. The former, though sometimes obscure from their situation, should by no means be overlooked. If the plant belong to the Linnæan class Diœcia, as do the hop and the honey locust, specimens from both the staminate and pistillate individuals must be procured. Beginners, who really set about collecting plants in earnest, should omit to take nothing they find in season. They should not neglect plants because they are common, "because they are mere *weeds;*" nor refuse a rare specimen because it is a poor one. It should be an invariable practice to secure the first sample met with. It may afterwards be in one's power to substitute it by a better specimen if necessary. As a general rule, young botanists should take

* Some Ferns produce a fruit bearing spike or raceme.

specimens of those vegetables only, which are met with in flower or fruit. He who has already an extensive collection, will lay hands on every thing he sees that is new to him, in what condition soever he may find it.

It is strictly enjoined upon us by some, to abstain from collecting plants while they are moistened with dew or rain; an injunction which I would recommend no one to regard very closely. For if the water be shaken from them, or wiped from them with a fold of bibulous paper, they admit of being as well preserved as though collected under the most favorable circumstances.

Directions for drying plants. The next thing to be attended to is the drying process. If a loose bundle of herbs be hung up in an airy chamber, in a few days they will generally become quite dry. If the light be mostly excluded by closing the shutters, the leaves, and oftentimes the flowers, will retain their natural colors. The leaves, however, are sure to become rugose and contorted, and the petals crisped and deformed. To obviate these displacements, the fresh plant may be placed in a jar, and the vessel carefully filled with fine dry sand. The specimen imparts its humidity to the sand, while the sand faithfully retains its various parts in place. After this arrangement has been allowed to continue a few hours, the desiccation may be materially hastened, and with perfect safety to the specimen, by exposing the jar in some manner to a heat not exceeding 120 degrees Fahrenheit. Plants dried in this manner, cannot be admitted into the leaves of an herbal. They must be kept in a situation quite dark; or in time they will become blanched by the influence of light.

Specimens placed at intervals of 50 or 80 pages between the leaves of an old printed quarto, and subjected to moderate pressure, will become very well dried in the course of two or three weeks; and in the meantime they require no attention. Since the leaves of paper are invariably wrinkled or rendered uneven, no valuable book should ever be used for this purpose.

* * * * * * *

"*Directions for making an Herbarium.* 1. Provide yourself with about 100 old newspapers, or other coarse paper about equal to that quantity and texture. Let these papers be very thoroughly dried. This will be a sufficient stock for the season.

2. Procure two smooth inch boards of the size of half of a paper; also a weight of lead, stone or other substance, of 20 pounds.

3. Gather three or four specimens of each plant as it comes in flower. Place these between the folds of the papers, as nearly in their natural state as possible. If the plant curved, let it curve in the papers, if the flower drooped in the field or woods, let it droop in the papers, &c. Lay the papers between the boards with the weight upon them. If 20 or 30 filled papers lie upon each other, it is all the same.

4. Two or three times each week lay your papers, containing plants, separately in the sun, with small stones on the corners, for three or four hours. When taken in, put the plants in press again. This exposure to the sun is not necessary, however, with single specimens of small plants, or if several leaves of paper be allowed to each specimen."—*Eaton's Manual, 5th Edition.*

* * * * * * *

I shall now proceed to describe the fixtures and manipulations, which in my opinion are decidedly preferable, as being most convenient and successful in practice.

And first the *press*. Dr. Short recommends that the compressing power be applied by means of a screw, or a simple lever; and though it is a matter of no great consequence, so the pressure be justly applied, yet I prefer having recourse to the wheel-and-axle principle. With an apparatus of the latter sort, any amount of pressure can be conveniently commanded, while it possesses over the screw press the following advantages.

1. A greater simplicity of structure.

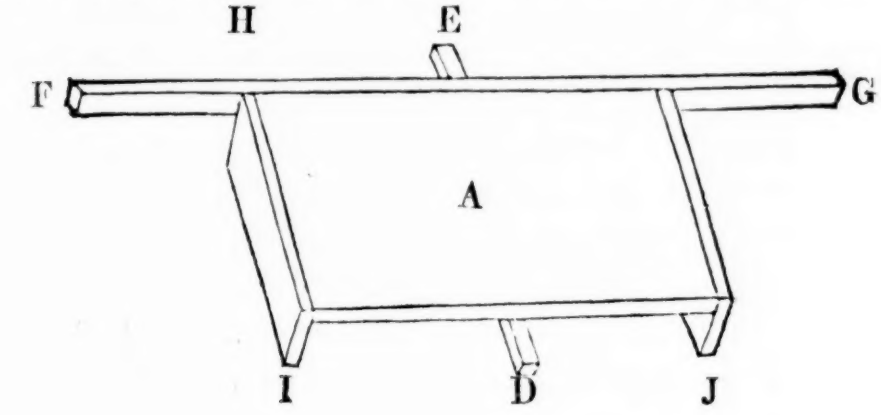
2. It occupies less space, and costs less money, though the expense of either is trifling.

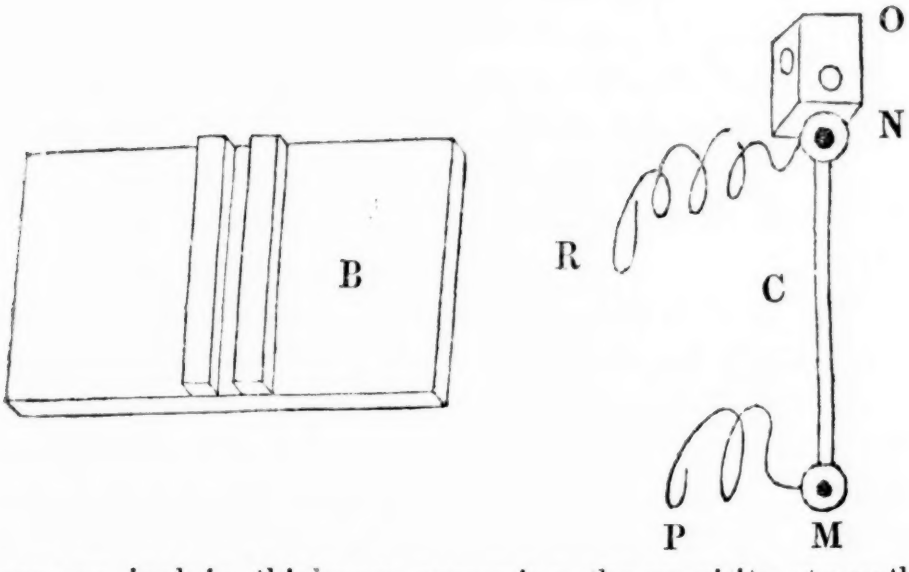
3. It can be put in operation or dismounted with much less time and trouble, and this circumstance alone is of material importance.

4. When the dryers and plants are approximated by compression, the severity of the pressure is relieved in the screw-press, while in this it can be made to continue unabated.

The construction of the *axle-press* can be best understood by reference to the figures.

A, the bottom piece. B, the top piece. C, the axle. The bottom and top pieces may be 20 inches long, by 14 wide; 18 by 12 may do. They should be made from a seasoned board





near an inch in thickness, possessing the requisite strength, and not liable to warp. The end pieces, I, H, J, are intended for maintaining the board a few inches from the floor, for the convenience of attaching or removing loops of rope. D, E, are the projecting ends of a strip of strong timber attached to the board beneath, over which the loops of rope pass. The ends of the longitudinal strip G F, are often useful in assisting to confine the lever soon to be mentioned. Transversely across the top piece and near the middle, two thin strips of board are to be strongly nailed, leaving an intervening channel or groove

an inch in width. The axle is to lie in this groove, and if that be of iron, or any stronger material than wood, the transverse strips may be approximated still nearer with advantage. The smaller part of the axle should be a trifle less in diameter than the width of the groove above mentioned, and it should exceed in length the width of the press, by two or three inches. M and N are enlargements two inches in diameter, perforated in the same direction by holes for the reception of ropes. O is an enlargement having a diameter of four or five inches, and traversed by inch holes for receiving the lever. The ropes R and P pass through the holes at M and N, and are secured by knots. They are of equal length and terminate in loops. The mode of using this press must be obvious from the preceding account of it. I will only say, that the materials to be subjected to pressure are placed between the boards; the loops R and P, are attached to E, D; the axle is brought to its place, at the same time rolling the excess of rope upon it; a stout lever four or five feet long is to be put in place, and from its end a weight suspended, or a small cord extended and secured to one of the projecting pieces for that purpose.

Three or four *thin boards* of wood or paper, of a size corresponding to the press, will be found almost indispensable, whenever we have on hand a large number of undried plants. They not only subdivide the contents of the press into smaller parcels, and thus equalize the pressure, but serve to separate specimens that are nearly dry, from those that are yet replete with moisture.

Any kind of soft, unsized paper may be used for drying plants, as tea paper, common wrapping paper, printing paper and old newspapers. Near three reams will be required, and this quantity will amply suffice, unless one wishes to collect very liberally. Half a ream of this must be tea paper of a fine quality and large size, or something equivalent to it, while the remaining two reams and a half, may be coarse wrapping paper of a similar size. The more body this has, the more bibulous it is, and the greater freedom it possesses from little

inequalities, the better will it be adapted for the purpose. *Dryers* are to be formed by inclosing five sheets of the coarse, in one of the finer quality; thus making in all twelve thicknesses of paper. These may be secured by a few stitches of small thread, which will render them less liable to be blown about by the wind, when exposed in the sunshine. It is more neat and convenient, to have the dryers precisely of the same dimensions as the press, though it is not essential. Four large newspapers folded within each other so as to present sixteen thicknesses of paper, make a very good dryer.

No trouble is experienced in transferring specimens from the port-folio to the press. Every thing was placed as it should be, in the field, while the plant was yet vigorous with life; and now the leaves and flowers, and even the minutest parts are disposed to keep their places. In a few minutes the port-folio may be emptied of its contents, which required days perhaps to collect. Place a dryer on a table, and upon it lay plants in such a manner that they do not overlay each other; cover them with a dryer and again lay on plants, and so on*. It is generally advisable to subject this bundle to fifteen or twenty pounds pressure, for a day or so, beneath a board, before it is admitted into the press. If the plants are not very juicy, as they generally are not towards autumn, or after protracted dry weather, this preliminary process may be dispensed with.

Although subjected to slight pressure only, in the course of twelve or twenty hours, the paper will become quite damp. The plants are now to be laid between dry papers, and placed in press; where, for a day or two, they may be subjected to a pressure varying from fifty to three hundred pounds. The next set of papers to which they are transferred, should be, if possible, absolutely dry. The pressure may now be unlimited; and generally the plants will be preserved the more beautiful, as the pressure is more considerable. The majority of plants

*That delicate specimens may be more easily removed from one set of dryers to another, they should be kept in single sheets of thin paper, as recommended by Dr. Short.

when thus treated, will become sufficiently dry in three or four days from the commencement of the process. Grasses, mosses, and ferns generally require much less time for drying than flowering plants; a single day being often sufficient to rid them entirely of moisture.

In regard to grasses, it is generally better that they should not be subjected to severe pressure; for it is desirable that the glumes should not be deformed, and that the leaves and culms, whether keeled or channeled, terete or triangular, should still retain their characteristic appearances. We should generally be satisfied then, with pressing grasses and their allies under a weight of ten or fifteen pounds.

When dryers have become damp from use, we are recommended to expose them in a favorable situation to sunshine. Some profess to be satisfied with spreading them upon the dry ground; but the flat roof of a shed, or a temporary floor of boards spread on the ground is decidedly preferable. If the dryers are not spread along in an imbricate manner, that is, if they are not permitted to overlap each other a little, it will be necessary to lay narrow strips of board upon them, to prevent the winds from blowing them away. They should be put out between the hours of ten in the morning and four in the afternoon; and if the weather be dry and the sky unclouded, two hours exposure will be sufficient. The most expeditious and effectual mode of drying papers, is by placing them around a fire. Two or three cords are to be stretched a few feet from a brisk fire, and the paper hung upon them. In eight or ten minutes they will require turning, and in fifteen or twenty minutes they will become more thoroughly dry than mere exposure to sunshine could ever render them. This plan has the advantage of being practicable in rainy weather, and I am satisfied that plants would be more beautifully preserved if it were always convenient to put it in requisition. In this manner I once rendered a parcel of common autumnal plants perfectly dry, in less than twenty-four hours; while the eye of the closest observer, could hardly discover that they had suffered the least appreciable change in color.

There are certain succulent, thick leaved vegetables, growing commonly in very dry situations, which for a considerable time resist the drying process; as Goodyera pubescens, Sedum ternatum, Erythronium americanum. Writers advise us to plunge them in boiling water, which by destroying the tenacious vital principle, materially abridges the time required for their desiccation. Specimens subjected to this ordeal invariably lose their natural color: it may sometimes be necessary, but I generally permit the drying to go on slowly, without scalding. In this patient manner, I have succeeded perfectly in preserving the characteristic colors of the species mentioned above.

When plants are sufficiently dry, they should be removed from the press, without any regard to the length of time they have been in. Although an opposite opinion has been expressed, I cannot conceive that there is any thing to be apprehended from rendering them too dry: on the other hand, I would recommend that they be perfectly dried in the first place, and ever after retained in that condition. Plants when moist, communicate a sensation of coldness to the fingers. A little experience will enable us to judge very correctly of this matter. When dried specimens are removed from the press, they may be put in sheets of wrapping paper, four or five specimens in a sheet, and it is of no importance if they overlay each other, if while in that condition, they be not subjected to pressure. They may then be placed in a trunk or drawer, and stored in an upper room, so that they may not contract dampness.

In changing his plants from one set of papers to another, as is necessary in the drying process, the student must not forget to accompany them with their appropriate labels. It may be well to attach the labels to one of the specimens in some rude manner, as by running the stem through a slit or two in the paper. It is easy to associate names with visible objects; and if the beginner will take the trouble to read the labels, when he has occasion to change the plants, he will be quite sure to connect them in his memory, almost without an effort.

The next subject to be considered, is the arrangement of specimens in some systematic manner, so that any particular species may be conveniently referred to.

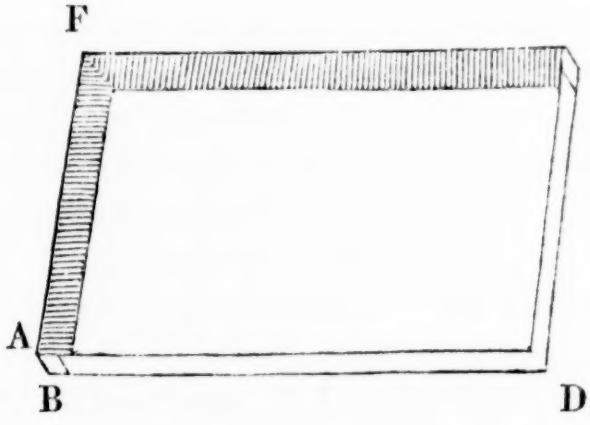
Directions for Arranging Dried Specimens.

Dr. Short recommends that the specimens be contained in sheets of paper, and not attached to them in any manner whatever; alleging as reasons, that they can be much more conveniently examined; that a better specimen may at any time be substituted for a more indifferent one; and that they can be more effectually protected from the injury of insects; not to take into account the time and trouble necessary to fix them, as recommended by Sir J. E. Smith, and others. I heartily concur with Dr. Short, in his general opinions relative to these matters; though I am rather inclined to disagree with him in some unimportant particulars: as for instance, in the quality of the paper to be used, the manner of attaching the labels, and the construction of cases to receive the papers and plants.

Those who wish to put up an herbarium in a neat and convenient manner, but of rather diminutive specimens, will find the common fools-cap paper exceedingly well adapted for their purpose. Well preserved specimens show to an admirable advantage, on fine white paper. The most *eligible* size of paper, perhaps, measures when doubled, ten inches by fourteen. It should be sized so that it may be written on,—very smooth and white, and moderately thick. If the plant be comparatively small, two, three, or more fellow species of a genus, can occupy the same paper. On the other hand, if necessary, the same individual species may occupy two or three papers. For my own part, I prefer keeping these papers with their contents, in the *cases* I am about to describe.

Sheets of paste-board are cut to the proper dimensions, and attached by an end and a side to strips of wood, as shown in the figure. They are best secured by small tacks; after which the wood and the nail heads may be concealed by pasting over thin leather, morocco, colored and polished pa-

per, or starched cambric. These cases are intended to stand in a cabinet on the end A F, unless they are received into larger cases of similar construction, when their position would be reversed. They should be simply numbered in some manner upon the back. The smooth, ash colored press-board, such as is used by cloth dressers, is a very good material to construct them of; and if it be desired, after the boards are cut of the proper size, but before they are put together, one side may be covered with marbled, the other lined with fair white paper, which merely adds to their appearance without contributing to their utility. The width of the wooden strips in the direction A B, which determines the capacity of the case, should not much exceed half an inch. The student may be induced to remove the boards farther from each other, thereby enlarging the capacity; but he will invariably find the cases the less convenient for it. Plants should never be crowded into a case so as to distend it much; twenty or thirty papers in each, dependent upon the thickness of the specimens, will be sufficient. The corner D may be secured, by slipping over it a contrivance two or three inches square, equalling the case in the thickness, and of a construction very similar.



Larger boxes constructed on the same principle, of thick binder's boards, with the backs gilt and lettered, so as to resemble large folio volumes, will be found very convenient for receiving the smaller ones. If this method be adopted, the edges of the plant-bearing papers when in place, will not be

visible. Each volume should contain five or six cases. The most eligible mode perhaps, is to dispense with the larger cases, keeping the smaller in a tight cabinet, the shelves of which are intersected at intervals of four or five inches, by vertical partitions.

Some diversity of sentiment has prevailed, in relation, to the system according to which plants should be arranged. There are some respectable botanists, who put up their collections in the alphabetical order of the genera.—This method certainly possesses the advantage of ready reference, in a pre-eminent degree; an advantage which will not fail of being appreciated, by the student who is not very familiar with the natural or artificial method of classification. This plan, however, necessarily associates the most dissimilar genera, as the graceful Monarda with the obscure Monila; and is consequently unfavorable to the acquirement of a true knowledge of nature. Though the Linnæan system does not offer the same advantage, it is liable to the same objection.—Take for instance, Monarda and Lycopus, which though inseparable from the mints, are yet made to occupy a place ten or twelve classes removed from them. I entirely concur in the opinion, that the Linnæan classification cannot be dispensed with so long as there are beginners in botany; and that it is the most eligible system for the arrangment of a *synopsis plantarum*, designed as a pocket companion, even for the accomplished botanist: yet I cannot discover the propriety of associating plants with the names of arbitrary classes and orders that really mean nothing. The Linnæan system is a contrivance for the sole purpose of conducting us easily to the name of a plant; and that once found, we have no farther use for it.

The professed object of the *natural method*, is to follow nature; to recognise those great orders or tribes making up the vegetable creation, which are distinguished by differences of general organization. Genera are grouped together, and orders defined, by characters drawn from the structure and functions of every organ and part, and a due estimate of their

relative importance. Even the minute cellules and microscopic vessels that constitute the vegetable tissue, are not overlooked; and the general appearances, habits and qualities of plants are also taken into the account.

I cannot concur with Dr. Short in advising beginners to marshal their plants according to the system of Linnæus; on the other hand, however limited or extensive one's collection may be, I would recommend him to arrange it according to the natural system, as improved and adopted by De Candolle and Lindley; an exposition of which, sufficient for the purpose perhaps, will be found in Eaton's Manual, (6th ed.) though I think Lindley's order of arrangement deserves the preference. In reviewing his herbarium, the student will then acquire correct notions of philosophical botany: he will learn to appreciate those indications of relationship, which will often enable him upon first sight, to assign a plant he has never before seen its true place in the system, and to form a correct idea in regard to its hidden qualities.

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The label must be written on the outside of the sheet, and supposing it to lie on an inclined desk, and to open towards the left, must be placed near the upper and right hand corner. If this be complied with, the labels can be referred to and read, without disturbing the plants, or removing the paper when in the case. Place first, and nearest the corner, the number of the natural order; then the name of the order; next the number and name of the sub-order, or section, if such there be; below this, the genus and species, referring to authority if necessary; after which the synonyms would be in order, but they may generally be omitted, if we select the most approved systematic name. Next the common or vulgar names, and lastly the locality and date; to which may be appended any brief observations thought necessary.

The following diagram will render the matter plain:

221
LABIATÆ.
§5. Nepeteæ.
Galeopsis tetrahit.
Flowering nettle.
RIVER BANK, OGDENSBURG, N. Y.
July 5th, 1831.

When several plants occur under the same order or section, the name may be omitted but the number retained. It is of less consequence to particularize the year, than to note the month in which the plant was collected. If several species of a genus occupy the same paper, the labels must be numbered, and small bits of numbered papers attached to the corresponding specimens. For this purpose, a little paste, mucilage of gum Arabic, or surgeon's adhesive plaster may be used.

Having the plants all duly labeled and arranged in the numbered cases, we have next to make an index, simply by taking an inventory of the orders contained in each case. This may be pasted for convenience upon a piece of press-board, or upon the inner side of one of the cabinet doors. It might also sometimes be convenient to have at hand an alphabetical list of orders, each with its number annexed. Until the student become familiar with the arrangement of his herbarium, when he wishes to find a particular plant, he will refer to the genus in Eaton's Manual, or Torrey's Catalogue, where he will observe the number of the order to which the plant belongs.

If we would preserve unchanged, the beauty and freshness of a collection for a series of years, we must take measures to preclude moisture, and prevent the depredation of insects.

My own experience does not exactly accord with that of Sir J. E. Smith, in relation to the danger to be apprehended from insects; which may perhaps, in part be owing to climate, or what is more probable, to the rapid and efficient manner in which most of my specimens have been dried. I have

never discovered that any of them are infested by the *Ptinus fur*. In those papers not scented with camphor or volatile oil, I have frequently noticed an *apterous* insect much more minute, which is barely visible to the naked eye at the distance of eighteen or twenty inches. The immediate mischief occasioned by them is by no means very serious: doubtless in a few years it could be more easily appreciated.

A very neat, successful, and convenient method of defending the herbarium from the encroachment of insects, is to remove each specimen temporarily, and sprinkle the fine powder of camphor upon that part of the paper which it covered. The process may be repeated as often as there is necessity for it.

One cannot observe too much nicety, in keeping a collection dry. The cabinet or trunk containing it, should be placed in an upper room, and must never be opened in damp weather, unless the air of the apartment be first rendered dry by a fire. If the climate be habitually damp, it would be advisable to line the cabinet entirely with tin plate, and list the doors with strips of gum elastic. It is an excellent practice to keep unslaked lime contained in a jar or paper, in the trunk or cabinet with the plants. It will not require renewing often if the cabinet be moderately tight. The lime keeps the air perfectly dry, in which condition it can be more completely impregnated with the vapor of camphor and volatile oils, and thereby effectually defended from insects.

The directions of Dr. Short, relative to *exchanges*, (*Instructions for making Herbaria. Lexington*, 1833,) are so entirely those which I would wish to give, that I shall offer no apology for adopting them.

"It should be the constant aim of every botanist, not only to increase his own knowledge, by every possible opportunity, but to add something to the general stock; and this is most readily and effectually done, by a free and liberal interchange of specimens with other botanists. * * * Thus will your collection be constantly enriched, by new acquisitions, and in proportion to the number of species in each genus which you get together, will you find it more and more easy to identify with positive certainty, any plant you meet with, by compar-

ing it with those you have. Of such as you are unable to ascertain the name by reference to the proper books, it will be only necessary to affix corresponding numbers to the specimens which you reserve, and those you send to your correspondent, who, if a competent botanist, will thus be enabled to furnish you the names. All specimens intended for the purposes of exchange, should be well secured in a light and tight box, of the exact size with the paper in which the plants are included; the top of which should make considerable pressure upon them, when fastened down, so as to prevent all displacement of specimens or labels, by transportation. * * * In this way, you will contribute essentially towards the formation of that desideratum in our Botany—*an accurate and complete Flora of the American Union.*"

Art. IV.—Delirium Tremens.

Prize Dissertation (for 1831,) *on* Delirium Tremens. By James Conquest Cross, M. D. *of Lexington, Kentucky.*

(*Transactions of the New-York State Medical Society, Vol. I.*)

According to the researches of Dr. Cross, people have continued to get drunk from the earliest ages of the world; but Delirium Tremens was not described till the latter part of the last century. Why it was not, our author is unable to find out. Perhaps it was confounded, in most cases, with drunkenness. Perhaps the more general cultivation of mind, in modern times, may predispose to this malady. If it really is, as seems probable, a more frequent disease in this century than before, it would be interesting, in a philosophical point of view, to discover the cause, though we are not aware of any special advantage, that would flow to society, from the discovery. If Delirium Tremens could be prevented by any other means than temperance, what would be the advantage? Would not the chapter of desolations from strong drink be still dark enough, if that item were stricken out? It would signify nothing, to prevent this or that evil consequence of drunkenness; such mitigation of its effects would only perpetuate the practice of drinking. Nearly in the same way, we view all the nostrums for the cure of drunkenness. As far as faith is reposed in them, they manifestly invite to intemperance. He who believes, that should he come to drink to excess, he can use a medicine that will enable him to "hold up," must *cæteris paribus*, be more likely to indulge himself, than if he saw no remedy ahead.

Had the respectable society of the Empire State, offered a prize for the best dissertation on the means of preventing

drunkenness, instead of the cure of one of its occasional effects, they would, we beg leave to say, have acted with greater wisdom, though not perhaps under a more benevolent impulse.

We know of no case to which the good old adage, *an ounce of prevention is worth a pound of cure*, has such strict applicability, as that of drunkenness. We do not affirm—once a drunkard always a drunkard; but it cannot be predicted of any drunkard, that he will ever become a sober man; on the contrary, all the chances are against him; and as to him who has drunk until he induced Delirium Tremens, we are prepared to say from the observations of many years, that no one need hope to see him permanently restored. Now and then such an one makes a good resolution, and begins the work of reform; but ere long, relapses, *as the dog returns to his vomit,—as the sow that was washed, to wallowing in the mire.*

In reference then, to Delirium Tremens, and the other diseases which spring from intemperance, let us look rather to the *prophylacticks*, than the *methodus medendi.* Should nothing be done in this species of delirium, our patients, we incline to believe, would not much oftener die, than when the most approved plans of treatment are adopted. In a majority of cases, the encephalic irritation would spontaneously subside, and the patient recover—provided his constitution was not laid waste to an irrecoverable degree, by the previous habit.

Nevertheless, something remedial is called for, and we shall therefore proceed to analyze our author's dissertation. He first treats of the literary history of Delirium Tremens, and informs us that the earliest notice he can find of it, is a tract by Dr. S. B. Pearson, of England, dated in 1801. He next treats of its name, and gives us the following synomimes: *Brain fever, Mania a Potu, Mania e temulentia, Febris temulentia, Ænomania, Delirium ebriositatis, Encephalitis tremefaciens, Delirium Tremens*, the last of which he prefers. The Delirium Traumaticum of Dupuytren, he supposes to be nearly of the same character, with Delirium Tremens.

He next enquires, whether intoxication is necessary to the

production of this malady, and concludes that it is not, which we think a correct opinion. We likewise concur with him in his next conclusion, that it is not indispensably necessary to the production of this disease, that the use of ardent spirits should be suspended. We admit that it has often seemed to follow such a suspension as a consequence, but in many of these cases, the patient no doubt, ceased to drink, because the delirium was forming.

Under the head of general character of the disease, our author has given a full, and, on the main, an accurate and graphical portraiture of the disease, which we shall transfer nearly entire, to our pages.

"In at least eight-tenths of the cases of this disease, it will be found to make its onset during that state of depression, which invariably supervenes upon the sudden relinquishment of the protracted and immoderate use of ardent spirits. Among the first evidences of the approach of delirium tremens, may be mentioned as the most general, a universal *malaise*, lassitude, coldness of the hands and feet, indistinct *horripilatio*, sometimes almost imperceptible, and uniformly imperfect.—There is frequently a considerable reduction, and sometimes a marked augmentation of heat of skin. The body generally, but particularly the face, is bedewed with an abundant and disagreeable cold, clammy perspiration. Sometimes the skin is hot and dry, and it frequently happens, that when perspiring, the fluid exhaled is comfortably warm. The pulse for the most part is remarkable for its slowness and feebleness; not yielding, in some cases, more than sixty-five beats in the minute. In some of the forms of this disease, it presents a character altogether different. Sometimes we find the pulse remarkably small, thready, quick, and so frequent, as to give more than 120 pulsations in the minute; sometimes gaseous, full, round, voluminous, but compressible; somestimes tense, resisting, and with difficulty compressed. The appetite is always impaired, frequently annihilated, and the patient generally experiences an insurmountable loathing for animal food. The tongue is usually moist, though sometimes dry. It presents numerous morbid appearances, and is sometimes perfectly clean. There is in some cases white fur, sometimes a sticky, glutinous slime, frequently white, and often of a yellow bilious hue. There is generally nausea, frequently vomiting, though in some cases the stomach is perfectly tranquil throughout the disease. Oppression and precordial anxiety are rarely ever absent. Frequently there are epigastric tumefaction and heat. There is sometimes an exception, but in a majority of instances, the head suffers from pain. This exists from simple headache to the most intense and insufferable torture. The spirits are generally gloomy and depressed, though sometimes in a

high state of exhiliration. The expression of countenance is usually dejected and melancholy, though sometimes haughty, fierce and daring. Pervigilium commonly exists from the inception, and obstinately persists, until the disease is subsiding. If the patient should sleep, his naps are short, unrefreshing, and frequently interrupted by alarming and frightful dreams. The hands generally tremble: often the tongue, and sometimes the muscles of the extremities, are spasmodically affected. There are cases, however, in which there is no tremor; the hands exhibiting astonishing normal steadiness. The bowels are almost uniformly in an obstinate state of constipation. In some rare instances, they are found in a state of colliquative solubility.

The length of time during which the system labours under the symptoms just enumerated, before delirium is developed, is various, and cannot be determined with much precision. It depends upon a number of collateral circumstances, hereafter to be particularly mentioned. Generally, however, they will be found to exist from twenty-four to forty-eight hours, although its development will take place earlier in a number of instances.

The form when it is revealed is peculiar, and so far characteristic, as to be seldom developed in any other abnormal state of the system. Its conspicuous attribute consists in a belief of the existence of frightful objects, in positions in which, as Dr. Pearson has well remarked, it is physically impossible for them to be situated. The patient fancies that Satan is attached to the ceiling, and as his disease increases in intensity, his majesty appears to hover over him, and he will shrink as if there were reality in the impending danger. If he is a soldier, and has ever been in battle, the contortions of his body show that he is attempting to avoid the thrust of bayonets, that are on the point of being plunged into his vitals. His apartment is frequently crowded with his imaginary intruders. He is constantly pursued by an enemy, whose machinations it is his exclusive study to defeat or to elude. He is in great dread of assassination. The co-operation of his attendants is frequently solicited to assist him in defending himself against enemies, who wish to shoot or poison him, or to drive from his presence disgusting objects, that annoy him exceedingly, such as snakes, lice, rats, frogs, and vermin of every description, with which he imagines the floor of his chamber or his bed to be covered. Sometimes snakes are in his bed, attacking him at all points, which, from his deportment, seem to inflict real pain. It often happens that his apartment is so crowded with visitors, who are so zealous and indefatigable in their attendance upon him, that he complains of their keeping him from his regular hour of repose; sometimes they disturb him by repairing or altering the house; sometimes they severely castigate him with the lash; they pull off the bed clothes, dance, box, and go through various gymnastic exercises.

His loquacity is unintermitting; he holds colloquial intercourse with ideal personages. Imaginary sounds distress him exceedingly.

A soldier cannot be persuaded that he is not arraigned for the com-

mission of some crime, which is to subject him to the penalties of the military code, and his mind is altogether engrossed in preparing his defence. If religion has ever been a subject of deep and engrossing reflection, he supplicates for mercy. If he is subjected to personal restraint, the dilapidating condition of his pecuniary affairs imperiously demands his immediate attention. His confinement he is apt to suppose illegal, and designed to answer some individual or selfish purpose. Often, under the pressure of urgent business, he imagines he has walked or rode several miles, when he has not left his chamber. Under the impression that the house is about falling, and will crush him to death, he is exhausted in attempting to support its sinking walls. He is rarely satisfied with the situation of the furniture, particularly with that of his bed, which he will leave, if not prevented.

Solitude is frequently a state of dreadful agony. He entreats and conjures most pathetically not to be left alone, exposed to the unrelenting cruelty of the demons and evil spirits by which his room is crowded, and who only wait until he is unprotected to accomplish his extermination. No excuse, no apology, is sufficient to persuade him to suffer his attendants to retire. No reasoning or assurance can convince him that his apprehensions are unfounded.

Under this morbid excitement, he conceives plans, which it is perfectly impossible to execute; and often he is intent upon the execution of plans previously formed. Sometimes it has been observed, that individuals laboring under this species of delirium, have given proofs of a much richer, more exuberant and brilliant imagination, than when the intellectual faculties were in a state of perfect equilibrium. Occasionally they discover a grandeur of conception, pregnancy of fancy, and an eccentricity of thought, that fill the mind, inclined to the elegant pursuits of philosophy and literature, with unlooked-for pleasure.

To divert the mind from the subject of its delirious wandering, is frequently absolutely impracticable, and attempts to accomplish it often result in an aggravation of the symptoms. Injudicious opposition is apt to transport them with rage. Those that do not possess full belief in their absurdities, are treated with ineffable contempt. Deportment of a soothing and conciliating character may sometimes succeed in securing their confidence, but advantage should not be taken of the treacherous calm which results from it, to propound numerous or impertinent questions. This is almost certain to occasion confusion of thought, and aggravation of the delirium. It is a matter of astonishment to observe with what precision the expression of countenance corresponds with the emotions which disturb the mind, and the ideas that float wildly through the desolated mansion of thought.

Frequently patients display achievements of astonishing corporeal vigor, but it is generally of short duration, and is invariably succeeded by an almost overwhelming muscular feebleness.

It has been asserted, that this delirium always relates to and is exclusively engrossed with the patient's private affairs. This is doubtless very commonly the case; but when it is asserted to be universal,

we dissent, from a conviction that it is unsustained by experience. It sometimes happens that he cannot be convinced that he is in his own house; and the calamity which he dreads is not always personal. The misfortunes of his friends constitute, on some occasion, the ground of his complaints.

At night, or if the apartment of the patient should be darkened, this delirium will certainly be exacerbated.

The symptoms above enumerated, may continue as long as ten days, but at the expiration of that time, convalescence must be established, or they will assume a character decidedly adynamic. Either of these events may, however, and actually do, in a majority of cases, supervene sooner, but ten days is the period beyond which a patient cannot labor under delirium tremens, except the symptoms be adynamic.

When, therefore, the disease has not been completely subjugated within the time designated, the following symptoms will be found to exist. Perspiration now issues almost in a stream, from every pore of the skin; the whole body trembles, and the hands in particular are almost paralytic. The pulse is now smaller, more tremulous, thready, and so exceedingly rapid, that in some cases, it is impossible to count it. The tremor of the hands, and subsultus tendinum, may, however, deceive us in regard to the strength of the heart. Under these circumstances, there is some difficulty in feeling the pulse, and if we are not careful, we may believe it to be so frequent as not to be numbered, and so feeble as to be almost imperceptible, when in fact, if the patient should become tranquil, as sometimes happens, we may find it not very frequent, nor very feeble. The tongue is dry, occasionly cracked, and encrusted; the countenance is suffused, and its expression anxious; the pupils are contracted; if he is able, the patient picks at the bed clothes, his delirium is now low, and muttering; the urine and excrement are passed unconciously. Sometimes he becomes insensible, and expires in a comatose, or apoplectic state."---pp. 22 27

Dr. Cross, in the next division of his subject, proceeds to inform us, that "there are no less than four separate and distinct varieties of Delirium Tremens. First, sthenic,—second, hypersthenic,—third, asthenic,—fourth, bilious. We do not, however, attach very great importance to these distinctions. That which is hypersthenic, may, in three hours, be made asthenic, by the use of the lancet, and to a complication with deranged biliary action, each of the first three varieties may be considered equally liable.

Passing over our author's remarks on the discrepancies between Dr. Coates and himself, in regard to the symptoms of the disease; and also, his views of its progress and diagnosis, as

not presenting much of interest or novelty, we come to his digest of morbid anatomy, beginning with that of the BRAIN.

"First. That there is congestion of the veins of the brain, which we deduce from the testimony of Professor Chapman, Mr. Howship, Drs. Barkhausen, Shirlitz, Brown and Peace.

Secondly. Drs. Barkhausen and Snowden testify to the existence of a florid or reddish appearance of the brain.

Thirdly. That there is actual inflammation of the brain, is proved by the evidence of Professor Chapman, Drs. Barkhausen, Shirlitz, Howship and Hunt.

Fourthly. That inflammation is not of uniform occurrence, is established by the silence of Drs. Snowden, Brown, Sutleffe, Peace, and the positive declaration of Drs. Johnson and Barkhausen.

Fifthly. That there is occasionally an exudation of congulable lymph, is testified to by Drs. Blake and Hunt.

Sixthly. That sanguineous extravasation occurs, is proved by Professor Chapman and Dr. Peace.

Seventhly. That serous effusion beneath the arachnoid membrane, and into the lateral ventricles of the brain, is a circumstance of almost uniform occurrence, is fully demonstrated by the testimony of Professor Chapman, Drs. Barkhausen, Howship, Blake, Snowden, Shirlitz, Hunt and Peace.

Eighthly. That there is, in some instances, a peculiar emptiness of the vessel of the brain, or a pale, watery blood, in the large veins of the pia-mater, we are authorized to conclude, from the statements of Drs. Barkhausen, Sutleffe, and Mr. Howship.

Stomach.—As this is the organ upon which the morbific impression is made distinct, traces of abnormal action should be discovered. Thus we are informed by Professor Chapman, that he has uniformly found this organ in a state of high inflammation. In two instances, it is remarked by Dr. Snowden, that the stomach "was florid, and appeared to have been highly inflamed." By Barkhausen we are told, that the mucous membrane of the stomach was found reddened. The same observation is made by Dr. Lind. We are told by Dr. Peace, that "some few red specks existed," some of the vessels of the stomach "were distended, and exhibited an arborescent arrangement." We are not advised if these morbid appearances were considered as the result of inflammation. In the case, however, of Ellen Mooney, we are told by Dr. Peace, that there were "patches of inflammation at the large extremity of the stomach." Although it may be considered exceptionable, we cannot refrain from adducing the evidence of Dr. Staughton, in illustration of the point under consideration. This physician says, that the dissections which he has made himself, or in which he has participated, uniformly disclosed an inflamed stomach. By Dr. Coates, inflammation of this organ is altogether denied. This, to a certain extent, is doubtless true, for there are unquestionable instances of this disease, in which no trace of inflammatory action can be

detected, In others, however, the authorities just appealed to satisfactorily demonstrate that inflammation does exist in the stomach, and sometimes in a most perfect form.

Why facts in illustration of the state of the stomach in delirium tremens, are not more numerous and diversified, is ascribable to two substantial causes. In the first place, for a considerable number of years, it was not suspected that the stomach was at all implicated in this disease. In consequence of this, post mortem examinations were not extended farther than to ascertain the condition of the brain. In the second place, it has frequently happened, that permission could not be obtained to examine more than the contents of the cranium.

Liver.—In those who have for a considerable length of time indulged in the practice of frequent intoxicasion, the liver is rarely, if ever, found in a perfectly sound condition. In a state of intense predisposition, it cannot avoid being deeply implicated in delirium tremens. Thus, in the dissections made by Drs. Armstrong and Brown, this organ was in a state of congestion. By Professor Chapman, we are told, that in his dissections, the liver has invariably appeared variously diseased, and among numerous proofs of chronic derangement, there were "sometimes recent inflammatory marks." It is stated by Dr. Snowden, that "this organ always exhibited appearances of a preternatural character." In two subjects who had experienced repeated attacks of this disease, on making an incision into the posterior part of the right lobe of the liver, my knife was followed, in one, by a *pint*, in the other, by nearly a *quart* of sanious pus." Dr. Barkhausen says, that "besides the alterations which have been described as occurring in the brain and membranes, morbid appearances were discovered also in other important organs, particularly in the liver and spleen, both of which are, it is well known, often the seats of disease in drunkards." In a dissection which was made by M. Maunoir, the liver was found very much enlarged; it was of a lighter hue than ordinary, and there were tubercles in its parenchyma in a state of suppuration. Proof to any extent of the existence of a chronic disease of this organ, might be easily adduced, but it is our wish to confine our remarks to those appearances that have resulted from recent abnormal action. That we have not been able to produce evidence of the implication of the liver in delirium tremens from a greater variety of sources, will not surprise the reader, when is he informed, that it has not engaged the particular attention of any author who has investigated the nature and seat of this disease. Indeed, it has been generally considered *hors de combat*, and what has been said of it has been more the rusult of accident than design.

Anomalous morbid appearances.—By Dr. Staughton, the bowels and peritoneum were found inflamed. The colon was seen by Dr. Peace of an uniform redness; the lining membrane of the aorta and pulmonary artery, the valves, particularly the semilunar, of this artery, and the mitral of the left ventricle, were seen of a reddish hue, by Dr. Washington; and Dr. Snowden has seen the pericardium distended, by a preternatural quantity of water.

In the preceding necroscopic investigation, several morbid appearances were noticed, which, it is manifest, are not necessarily a part of the disease under consideration. This remark is especially applicable to serous effusion and sanguineous extravasation, which are the incontestible effects of an action previously instituted in the brain. The congestion of the cerebral veins, which was noticed in several instances, evidently supervened, while the patients were in *articulo mortis*. This is a common case in almost every fatal malady. We have, therefore, no satisfactory reason to authorise the supposition, that the congestion of the veins of the encephalon in delirium tremens, is essentially unlike that which is of a very common occurrence in almost every affection, during the convulsive throes of disolution. In this organ there is conclusive evidence of vascular irritation, inflammation, and nervous irritation. These are the only marks of disease which it can be pretended are primitive.

In the stomach, it is impossible to deny that, in some instances, there are marks of irritation and inflammation; and that in others, the evidence of inflammatory action is entirely absent. The same declaration is true of the liver, and doubtless had that organ been more closely attended to, the evidence of its participation in delirium tremens would have been more diversified and conclusive. Any traces of abnormal action in other tissues, is unworthy of particular notice. We shall now attempt to determine the organ primitively affected in this disease."—pp. 49--53.

Our author now proceeds to consider the proximate cause of Delirium Tremens, and particularly to determine the organ primarily affected. He proposes to show that this cause

"Consists originally either in vascular irritation, actual inflammation, or nervous irritation of the stomach, with immediate sympathetic vascular irritation, actual inflammation, or nervous irritation of the liver, and, subsequently, of the brain."—p. 53.

We have not space to introduce a statement of our author's reasonings in support of this proposition. They run through more than 25 pages; and are chiefly devoted to the support of the gastric origin of Delirium Tremens as asserted by Dr. Klapp, and to an examination of Dr. Coates' objections to that pathology. Dr. Cross does not, however, believe that gastritis is always present, though the first link of the morbid chain is in the stomach: it may be inflamed or only irritated. In the course of this discussion, Dr. Cross has introduced from various sources a number of interesting facts relative to the

influence of disease of the chylopoietic viscera, in the production of mental alienation, which are worthy of the attention of all who would comprehend the production of the latter. Referring to the work itself for a full account of his pathological speculations, we shall proceed to give some account of the treatment proposed.

"By Dr. Pearson it is asserted, that if the lancet is used, "the odds against the patient's existence, let him be ever so robust, are at least twenty to one." By Dr. M'Whirter it is said, that he has been "well assured, that when blood-letting, blistering, and abstinence have been prescribed, the patients have to a man died." It is said that three cases treated by Mr. Hunt, on the antiphlogistic plan, terminated fatally. Dr. Stewart, who, we are informed, has seen much of this disease, enters his protest against blood-letting. It is proscribed by Dr. Johnson. By Dr. Ayre, this disease is treated exclusively upon the narcotico-stimulant plan. Without hesitation it is declared by Dr. Coates, that the lancet "does not appear to have the least discoverable effect, positive or negative, upon the delirium; and that it actually does harm to the patient, by diminishing his strength, an item highly necessary to the cure."

Dr. Snowden says, it may be necessary to take a few ounces of blood if the pain in the head be very intense. It is remarked by Dr. Sutton, that "at a very early stage of the paroxysm, if in a plethoric subject, blood may be drawn." By Dr. Stephen Brown it is alledged, that the use of this remedy "should be restricted to the early stage of the affection, and to habits where the stamina are not impaired by a long practice of intemperance." Of the same import is the advice given by Dr. Barkhausen. On this subject, it is stated by Dr. Armstrong, who is a host himself, that "in constitutions that have not been shaken by reiterated drunkenness, I have known early and moderate venesection of much use, especially when followed by active aperients."

Prof. Potter, whose high pretensions as a sound and successful practitioner have never been questioned, declares, that "in young subjects, and even in patients advanced in life, but recently attacked, we have frequently bled to the amount of seventy or eighty ounces, and several times an hundred in three or four days." In some instances so energetic are the symptoms indicative of inflammatory action, that Prof. Frank has been induced to conclude, that this disease is a peculiar *encephalitis*, and consequently in accordance with this view of the subject, the treatment is conducted exclusively upon antiphlogistic principles.

The position, that there are cases, which imperiously require the lancet, and others, in which its effects will be very equivocal, and others again, in which it will be positively deleterious, is absolutely incontrovertible.

The necessity for either general or local blood-letting does not frequently occur in *sthenic delirium tremens.* To the author, there has not yet occurred an instance, in which he considered the detraction of blood from the arm as authorised. That such a case might occur we can conceive, but I imagine, that it would more properly come under the head of hypersthentic than of this variety of delirium tremens. When a loss of blood is indicated we have always preferred the application of cups to the back of the neck or to the temples.

In *hypersthenic delirium tremens*, the indication is much plainer, and the propriety of the general detraction of blood is frequently imperiously necessary. Cases of this variety, are comparatively of rare occurrence, but when they do happen, and exhibit a certain degree of violence, as well might we attempt to cure it without the lancet, as common phrenitis. Among the earliest phenomena, convulsions and an apoplectic state of the brain, are sometimes found. Under such circumstances, so necessary is the lancet, that it needs no comment." —pp. 82--7.

In asthenic and bilious Delirium Tremens, particularly the former, the lancet in the opinion of our author, is contra-indicated. For ourselves we must say that we have seen but little benefit from the lancet in any case of Delirium Tremens, that has yet come before us.

Emetics. Dr. Cross discusses the value of emetics, as well as of blood-letting, by a reference to practical writers, the majority of whom he finds to be their eulogists. Notwithstanding this, he is persuaded that they do not possess any superior advantages, and he believes them sometimes injurious. The Dr. has come to the conclusion that when they do good, it is by acting on the liver and through it, on the brain, an explanation which we think quite gratuitous. That they exert a beneficial influence on the liver when disordered, we do not deny, but have as little doubt, that they exert a salutary influence on the brain independently of the liver. We think more favorably of their effects in Delirium Tremens than our author, though we certainly have not realized from them as many advantages as Dr. Klapp the American author of the practice. Dr. Cross advises against allowing the emetic medicine to pass off by the bowels, which is good counsel. To this end it is proper, where such an event can be anticipated, to administer laudanum in connection with the emetic solution, or to give pills of opium and tartarized antimony. The tenden-

cy of ipicac to act on the bowels is so much less than that of tartar emetic, as to constitute a recommendation in these cases, was it not that its emetic qualities are too feeble. Our author thinks that emetics are absolutely contra-indicated in hypersthenic Delirium Tremens; but this denunciation is far too sweeping.

Very acute inflammation of the brain accompanied with *great* power of the heart, is not likely to exist in this disease, for its remote cause must have enfeebled the circulation, before it could have so disordered the nervous function, as to induce this peculiar form of delirium. In its most acute varieties, then, after copious blood-letting, antimonial emetics may in our opinion be given with safety; especially if administered in small and repeated doses so as to excite protracted nausea. In these cases, should they act on the bowels, it will do no harm.

Dr. Cross is of opinion, that in the asthenic variety, emetics are "strongly indicated and particularly useful." When, however, the constitution is greatly impaired, and the circulation very languid, emetics may do harm by their prostrating influence. In such cases, the vomit should be dissolved in a strong infusion of valerian, (*valeriana sylvestris, radix;*) or instead of the Antimony, mustard should be used, as in the more advanced stages of Cholera, to which, in fact, asthenic Delirium Tremens has much physical assimilation. In cases of this kind, applications to the skin, as a hot and stimulating foot bath, and a sinapism to the epigastrium, are highly beneficial during the operation of the vomit. We entirely concur with our author in the favorable opinion he expresses of emetics where there is a bilious complication.

Cathartics. Dr. Cross speaks more favorably of Cathartics than most writers. He has never seen a case of the disease in its first stage, in which a Cathartic of Calomel, Rhubarb and Aloes was not positively indicated. These articles he prefers to all others. The saline and hydrogagne he condemns. In hypersthenic Delirium, he considers purging of great value: in the bilious variety it is equally called for. On the

whole, his partialities for the Cathartic treatment are greater than our own, but we admit that in many cases it may be employed with great advantage.

"When bleeding or puking is indicated, the lancet and emetics should precede cathartics. By observing this precept, the action of the latter will be promoted; and, moreover, they will not then interfere with the operation of each other. This is a circumstance of considerable importance, and should not be neglected. Hurry and precipitation in the exhibition of such active remedies, might produce immediate exhaustion in a system the most robust. We have uniformly permitted the immediate effects of venesection to subside before a cathartic is exhibited, and where emesis is indicated, we suffer the stomach to become tranquil before purgatives are given."—p. 101.

Opium. Admitting that of all the remedies for Delirium Tremens, opium has been most extravagantly commended, our author regards it as worth while to ascertain the principles which should regulate its employment. We shall make from this part of his book the following extract.

"As a rule of general application, opium is never to be used except when the pulse is soft and compressible. To accomplish this, either local or general blood-letting is frequently necessary. The propriety, also of premising the use of this drug, even in cases where a pulse of this character exists from the beginning, by the exhibition of a cathartic, has been fully verified by the clinical observation of the author. Although we may be inclined to attach more importance to this measure, and enjoin its necessity more earnestly than most physicians, yet there are those who speak of its utility in particular instances, in terms of decided approbation. By Dr. Armstrong, if the patient be tolerably robust, the liberal use of purgatives is recommended to be continued through the first two or three days. It is said by Professor Chapman, that "after copious evacuations of the stomach, in which the bowels generally share, we may recur with the happiest effects to the opium and brandy treatment." By such authorities the correctness of any practice may be established.

The propriety of giving calomel in conjunction with opium, has been strongly urged by Dr. Armstong. His practice has, however, been condemned by Dr. Brown; but his objections spring exclusively from a contracted and erroneous view of its pathology. A review of the evidence in the preceding pages must convince the reader, that the liver is deeply implicated in delirium tremens, and that consequently, the interposition of calomel is necessary for its removal. Repeated experience has convinced us, that no article can be associated with opium, which will enable it to fill as many important indications as calomel. It stimulates the liver, and produces a prompt and powerful

disgorgement of that organ; with opium, calomel has been demonstrated to possess a peculiar and prodigious power in the subjugation of vascular irritation and inflammation of the stomach; and to arrest vomiting, a symptom sometimes very annoying, calomel has not a superior. These are incontestible attributes of calomel, and it must, therefore, be signally serviceable in this disease.

The blue mass has been recommended in conjunction with opium. Of its efficacy, in this complaint, we have no knowledge. The tardiness, however, of its operation is an insuperable objection to it in the estimation of the author. Nor have we any personal acquaintance with the remediate virtues of the spirit, terebrenthinae when exhibited in consociation with opium in awakening the dormant sensibility of the stomach. To promote the operation of this drug, camphor has been associated with it. Of its powers in this respect we cannot speak with much confidence: but to prevent calomel from griping we have frequently used it, and very advantageously. Dr. Armstrong is of opinion that the efficacy of laudanum is considerably improved by its combination with æther. Of this we shall speak in another place.

In no disease, with the exception of *tetanus*, has opium been given in such enormous doses as in delirium tremens. As much as one hundred grains have been exhibited and with complete success. This undaunted enforcement of opium is sometimes unavoidable, but we are, nevertheless, convinced, that a more prodigal use is commonly made of this powerful narcotic than is absolutely necessary. Much of this enormous expenditure may be curtailed by properly preparing the system for its administration, and by its association with suitable auxiliaries. These are circumstances which deserve the closest attention. By judicious management they may be made eminently subsidiary to success.

Let us not, however, be understood to mean, that this will always enable us to subdue delirium tremens by what may be considered a moderate quantity of opium. If such an impression is made, the physician will be disappointed. Rebellious cases will occasionally occur, notwithstanding every preparatory precaution may have been taken, in which it will be imperiously necessary boldly to enforce the exhibition of this remedy to the utmost possible extent. Under such circumstances, there is no point at which we can venture to say the physician should stop. The emergency of the case should be his only guide. After he has come to the conclusion that opium is the proper remedy, quantity should not deter him. Think not of its poisonous effects: subdue the disease at the hazard of poisoning the patient. Infinitely more safe is it to run the risk of bringing the system under the poisonous influence of opium, than not succeeding in completely subjugating the irritation of the stomach. Unrestrained in its action, the latter will surely extinguish life, but under proper management the former never will.

We speak thus confidently, because of the unlimited faith we have in the efficacy of cold affusions as a remedy for poisoning by opium. Experiment and experience have both assured us, that our confidence

is not unfounded. In the hands of the author, though his trials with it have been considerably diversified, it has never failed. In spasmodic affections we have frequently had recourse to quantities of opium, upon which we never would have ventured but for the firm conviction, that our patients were always safe under the influence of cold water. On one occasion, we gave more than one hundred grains of solid opium in less than ten hours: the prostration was overwhelming, but without the aid of any auxiliary, the rigid enforcement of cold affusions at last proved completely triumphant.

We, therefore, assert, that after the system is properly prepared, and the necessity for its exhibition manifestly appears, no quantity should deter us. There is no reason for apprehension. To this declaration we are in part encouraged by the fact, that cold water itself has been warmly commended in the disease under consideration. This circumstance may, therefore, embolden us to have recourse to cold affusions with more freedom, as we are on high authority assured, that the interests of our patients will not be necessarily compromised."—pp. 106–9.

On the predisposing and associate measures, calculated to give greater efficacy to opium, than if that drug were given at once and alone; our author has a judicious summary of observations, some of which we shall extract.

"In sthenic delirium tremens, after the bowels have been freely opened and the liver stimulated to the production of a copious discharge of bile by the action of a dose of calomel, aloes and rhubarb, if the pulse should be soft and compressible, we commence the exhibition of calomel and opium in conjunction. Twenty grains of the former and three of the latter is the dose we ordinarily administer in the commencement. In three hours we repeat the opium alone, and in three hours more the same quantity of calomel and opium is repeated. In two or three hours after the exhibition of the last dose, fifteen grains of aloes and the same quantity of rhubarb is given. This simple plan has never failed of success but in one single instance. Indeed, it sometimes happens that the patient is sleeping soundly before the time arrived for the exhibition of the aloetic cathartic. When, however, sleep does not occur after the operation of the cathartic, as happened in the failure just alluded to, the same course is to be repeated, but more energetically, and the disease will unquestionably yield.

By this system of treatment the bowels are relaxed and the liver disgored; circulation is equalized, and vascular irritation of the stomach is promptly subdued. Several beneficial purposes are answered by the exhibition of a cathartic after we suppose we have given opium and calomel enough to remove the disease. Before the time has arrived for the administration of aloes and rhubarb, the opium and calomel will have accomplished all that we expect from them, but as it is possible this course may have to be repeated, it is important that the bowels should be evacuated to prevent their accumulation. Moreover

the calomel retained by the opium may excite salivation. Although this is not a circumstance of much consequence, it should be avoided when possible. The liver under the action of mercury pours out bile exuberantly, and as it is sometimes acid, it may prove a source of considerable irritation, and thus defer and even prevent sleep after the disordered state of the stomach has been entirely removed.

In hypersthenic delirium tremens, preliminary to the use of opium, the lancet and cathartics should be energetically enforced until the pulse becomes manifestly soft and compressible. In conjunction with the lancet, purgatives are the most powerful means of diminishing cerebral determination. It will be necessary, therefore, in a majority of cases, to use them freely during the first two or three days. But we shall be disappointed if we expect to subdue the symptomatic inflammation of the brain. All we can do is to moderate the symptoms so as to enable the opium and calomel to act efficiently. It is perfectly clear that the secondary affection cannot be removed before the primitive inflammation is subdued. To bleed and purge, therefore, until the inflammation of the stomach is completely subjugated, would be to force the system in a number of instances, into a state of irremediable prostration. We are well aware that this disease has yielded to a treatment purely antiphlogistic. This, however, we cannot but consider unnecessarily hazardous. If there was no other alternative, we should be obliged to have recourse to it, but as we have at command remedies not only more safe, but decidedly more effectual, we feel authorised in condemning a treatment altogether depletory.

The controlling influence exercised by opium and calomel over inflammatory affections of the mucous and serous membranes, has been incontestibly evinced. In behalf of these articles we have only to appeal to the testimony of Mr. Annesley and Dr. Armstrong. Numerous other sources of evidence might be laid under contribution, but these are sufficient. The efficacy of no treatment rests upon proof more diversified, concurrent and irrefragable. By the author, the effects of these articles in membriform inflammation have been closely studied for several years, and from an experience of their virtues in a great variety of cases, he declares as the deliberate conviction of his mind, that where judiciously managed, they are decidedly superior to the lancet itself.

When, therefore, we have subjugated the morbid energy of the vascular system, the indication of which is a soft and compressible pulse, to subdue gastric inflammation, we have immediate recourse to opium and calomel. Nor can we bring the system under their influence too expeditiously. They must be energetically enforced, and the readiness with which they will frequently remove gastric inflammation, will excite the wonder and astonishment of the practitioner. We pursue the same course here, so confidently recommended in the sthenic variety, except, that here the doses should be considerably larger. We rarely commence with less than four grains of opium and half a drachm of calomel. But in this variety, the disease will not as frequently yield to the first trial, as in the sthenic. I have not known it necessa-

ry to make more than one repetition in augmented doses. It is true, we have had but a very limited number of cases of the hypersthenic variety; but those that have fallen under our notice, have never required more than twenty-four grains of opium to accomplish their complete cure. But we have seen too little of this variety to assert confidently, that more may not in some cases be necessary. The quantity, however, under no circumstances, should be our guide: the effects produced are the only data from which sound inferences can be drawn.

In asthenic delirium tremens, as there is a feeble and very frequent pulse, physicians have had recourse to opium from the very beginning, and without making any attempt to prepare the system for its successful exhibition. This is a course of treatment deduced manifestly from an empirical view of the subject. I cannot discover the principles upon which it is founded. Besides a torpid condition of the liver, which unquestionably demands the most urgent attention, there is an obstinate state of constipation, which has arrested the attention of the most careless observers. To relax the bowels, is a preliminary step in the treatment of all the diseases with which we are acquainted, with the exception of delirium tremens, an affection which presents *prima facie* evidence of the necessity and importance of it. So plain an infraction of a fixed principle in clinical medicine, should not be committed, except for the most conclusive reasons."—pp. 113–16.

Of the great value of calomel and opium combined, in the treatment of sub-acute inflammations and in nervous irritations, we have more than once expressed ourselves in this Journal; and therefore on this occasion need only say that we concur in the foregoing observations.

In bilious Delirium Tremens, our author thinks there are two important indications;—to subdue vascular irritation, and prevent or extinguish nervous irritation.

"To remove vascular irritation, the lancet, emetics and cathartics, have been, under ordinary circumstances, the most effectual. In consequence of the enfeebled condition of the system, there is generally very inefficient excitement. This not only renders unnecessary, but absolutely precludes, the detraction of blood. This is a measure upon which we have never ventured. The prominency of the gastric symptoms readily reveals the necessity of emetics. In the exhibition of articles to produce this result, we are to be guided by the rules already delivered. But in the early stage of this variety, our reliance is upon calomel, aloes and rhubarb. The engorged condition of the liver is not only great, but manifest. If there is no tenseness or fulness of the pulse, it will not be safe to give more than one dose of these active medicines before we have recourse to such means as will have a tendency to alleviate nervous irritation. But in the event of

the presence of such attributes of the pluse as have been just mentioned, we may safely and successfully keep the bowels and liver under the constant action of the articles above suggested, until it becomes soft and compressible. Although it may be necessary afterwards to purge, it would be rather hazardous to push cathartics farther at present, before, or unassociated with, the interposition of other articles of a very different tendency. If, however, the physician has availed himself of the period of time which frequently elapses before the occurrence of a compressible pulse, to purge actively and effectually, he may succeed in completely subduing reaction. If then he boldly and energetically exhibits the sulphate of quinine, or any other suitable tonic, he may in some cases prevent the developement of the characteristic symptoms of delirium tremens altogether. We must not, however, encourage the belief, that this is an event of frequent occurrence. In eight tenths of the cases of this variety, the constitution has been so extensively impaired by previous habits of intemperance, that the active operation of a single cathartic will produce a compressible pulse. After this every alvine evacuation that is produced, unless the system is at the same time under the influence of corroborant medicines, will exasperate nervous irritation, and hasten the developement of delirium.

While it is now manifest, that the interposition of some article that has a direct tendency to remove nervous irritation, is imperiously called for, it is equally true, that the secretion of bile must be free and unobstructed. It is utterly impossible to dispense with calomel. Some means must, therefore, be devised for its safe and sufficient exhibition. While the liver is exposed to its action, nervous irritation must be removed, and the strength of the system must be supported. To extinguish nervous irritation, the syrup of morphine has answered my warmest expectations; and, to support the strength of the system, no article could be better adapted than the sub-carbonate of ammonia."
—pp. 121—2.

Our author enumerates camphor, henbane, belladonna, spider's web and hop, among the narcotics recommended for this disease, but finds no great amount of authority in their favor. Blisters to the head he thinks injurious, but has found a plaster to the pit of the stomach of much benefit.

Cold Affusion. Our author does not seem to value this very highly, but the authorities which he cites, are in its favor.

"When there is considerable determination to the head, indicated by much pain and heat, we may venture to apply cloths dipped in cold water to the temples and forehead, and with considerable advantage. Care must, however, always be taken not to continue them so long, or repeat them so often, as to produce much constitutional impression.

It may be proper to advertise the reader, that opium and cold affu-

sions are incompatable remedies. This assertion we make upon the authority of experience, both ample and diversified. While under the influence of cold affusions the system can never be induced to come under the sedative control of opium, and when the latter has produced any impression, its force is completely neutralized by the administration to a sufficient extent of the former. When, therefore, the use of opium is indicated, we should be exceedingly careful not to administer cold affusions. This we consider a practical precept which is to be rigidly observed; and so frequently is opium imperiously required, that the cases, it is evident, in which cold affusions may be with propriety employed are few, and in them it is only admissible in particular circumstances."—p. 130.

Many cases it appears to us will admit of the cold-dash to the head in a much more decided degree than our author would tolerate; and we very much doubt the existence of that incompatibility between the use of opium and the cold affusion, on which he insists,—at least to the degree which he alledges.

Ardent Spirits.—Dr. Cross discusses the question whether ardent spirits are necessary in the treatment of Delirium Tremens, and comes to the correct conclusion that they are not. We have no doubt but they may be made sometimes to do good, but the end may be attained by other and less objectionable means.

Moral Treatment.—The observations of our author on the moral treatment of the deranged from drink, are judicious. He recommends a mild government, with as much liberty as may be consonant with the safety of the patient; he might have added with the security of those about him, for this should never be lost sight of in our plans of regimen.

Although the maniac from drink is generally timid and disposed to escape from the dangers that seem to surround him, he is far from being at all times harmless. Should his temperament of mind be quarrelsome, overbearing or ferocious, he may at any time commit violence on those about him. We have several times witnessed this; and the melancholy act of Birdsall, who in a fit of Delirium Tremens, killed his wife, in the neighbourhood of this city, must be within the recollection of the readers of this Journal, in which a medico-juridical narrative of his case was inserted.

As our author has attempted a monograph of this species of Delirium, it would have been proper for him to have considered it in a legal and moral view, which he has not done. For ourselves we do not hesitate to express the opinion, that the *non compos* whose mental alienation is denominated Delirium Tremens, or mania a potu, should be regarded as equally irresponsible to the law, with the *non compos* who is called a lunatic; but having discussed this subject, in previous numbers of the Journal, we shall not resume it in this.

Having given a tolerably full account of Dr. Cross' Prize Dissertation, we shall bring this article to a close, by saying that we regard it as a creditable production, comprising a much greater amount of matter on the subject of which it treats than any other essay that has fallen under our observation. Dr. Cross is one of our most studious and indefatigable young physicians; and his dissertation presents much correct thinking, and many favorable indications of good scholarship, but his style would be improved by using fewer words, and, by a simpler collocation.

Art. V.—Somnambulism.

An account of Jane C. Rider, the Springfield Somnambulist. By L. W. Belden, M. D. Springfield, 1834, 18mo., pp. 134.

The object of this neat little narrative, is to give an authentic professional and popular acount of a case, which has lately excited much wonderment among the people, particularly of the eastern states. The author of the narrative, Dr. Belden of Springfield, Massachusetts, has acquitted himself well—that is without running either into credulity or scepticism.

The disorder of Miss Rider was one which cannot be very

easily defined. It was not sleep, nor dreaming, nor delirium, nor mania, and still it bore a resemblance to each or all. Dr. B. has applied to it the term of somnambulism, or sleep-walking, and perhaps no better word now *exists*, by which to designate it; but it is with no great propriety that such a state of mind is regarded as a modification of sleep. Because it *generally* came on when she was asleep, it does not follow, that it is a variety of that state. Very often, moreover, it came and went in the day time, without being preceded, attended or followed by the phenomena of sleep. But our object is to lay the facts in the case before our readers—not to speculate upon them.

The patient, 17 years old when affected with this malady, was a native of Vermont. She lost her mother in infancy from a disease of the *brain*. She was taken to Springfield and grew up there. Her intellectual faculties were well developed. From her earliest recollection, a small spot on the left side of her head, near the phrenological region of *marvellousness*, was tender or painful on pressure, and always felt much worse when she had headache, a disease to which she was liable. It was generally attended with a manifest determination of blood to her head. When 14 years old, she had chorea for several months. She was, while growing up, a sound sleeper, but occasionally rose and walked in her sleep. Her eyes, for years, were inordinately sensible to light. At 17 the catamenial function was not yet established.

The first distinctly marked paroxysm of somnambulism, was on the night of the 24th of June, 1833. Dr. B. found her struggling to get out of bed. She complained of pain in the left side of the head, her whole head was hot, her face flushed, her eyes closed and her pulse much excited. She took an emetic, threw up a quantity of undigested currants, and went quietly to sleep. The next morning she knew nothing of what had happened.

"Nearly a month elapsed before another paroxysm. Then, after several attempts to keep her in bed, it was determined to suffer her to take her own course, and watch her movements. Having dressed

herself, she went down stairs, and proceeded to make preparations for breakfast. She set the table, arranged the various articles with the utmost precision, went into a dark room and to a closet at the most remote corner, from which she took the coffee cups, placed them on a waiter, turned it sideways to pass through the doors, avoided all intervening obstacles and deposited the whole safely on the table.

She then went into the pantry, the blinds of which were shut, and the door closed after her. She there skimmed the milk, poured the cream into one cup and the milk into another without spilling a drop. She then cut the bread, placed it regularly on the plate, and divided the slices in the middle. In fine, she went through the whole operation of preparing breakfast with as much precision as she could in open day; and this with her eyes closed, and without any light except that of one lamp which was standing in the breakfast room to enable the family to observe her operations. During the whole time, she seemed to take no notice of those around her, unless they purposely stood in her way, or placed chairs or other obstacles before her, when she avoided them, with an expression of impatience at being thus disturbed.

She finally returned voluntarily to bed, and on finding the table arranged for breakfast when she made her appearance in the morning, inquired why she had been suffered to sleep, while another had performed her duty. None of the transactions of the preceding night had left the slightest impression on her mind—a sense of fatigue the following day being the only evidence furnished by her consciousness in confirmation of the testimony of those who saw her.

After this the paroxysms became more frequent, a week seldom passing without her getting up two or three times. Sometimes she did not leave her room, but was occupied in looking over the contents of her trunk, and arranging the different articles of dress. She occasionally placed things where she could not find them when awake, but some circumstances induced the belief that the knowledge of their situation was restored to her in a subsequent paroxysm. In one instance she disposed of her needle-book where she could not afterwards discover it; but after some time had elapsed, she was found one night in her chamber, sewing a ring on the curtain with a needle which she must have procured from the lost book.

The entire paroxism was sometimes passed in bed, where she sung, talked, and repeated passages of poetry. Once she imagined herself at Brattleborough, spoke of scenes and persons with which she was acquainted there, and described the characters of certain individuals with great accuracy and shrewdness, and imitated their actions so exactly as to produce a most comical effect. At this time she denied ever having been at Springfield, nor could she be made to recollet a single individual with whom she was acquainted here, except one or two whom she had known in Brattleborough. Even the name of the people with whom she lived seemed unfamiliar and strange to her.

Generally her conceptions relative to place were, to a certain extent, correct—those relating to time were very commonly inaccurate. She

almost invariably supposed it was *day;* hence her common reply when reminded that it was time for her to retire, was, "What! go to bed in the day time?" And when I say her notions relative to place were in accordance with fact, the statement requires considerable limitation. She very frequently imagined herself in a different room from the one where she actually was, and almost always in the room which she usually occupied when awake.

Still her *movements* were always regulated by the senses, and not by her preconceived notions of things. Her chamber was contiguous to a hall, at one extremity of which was the staircase. At the head of the stairs was a door which was usually left open, but which was once closed after she was asleep, and fastened by placing the blade of a knife over the latch. On getting up, she rushed impetuously from her room, and without stopping, reached out her hand before she came to the door, seized the knife, and throwing it indignantly on the floor, exclaimed, "Why do you wish to fasten me in?"

Without entering into a minute detail, I will only mention some of the most remarkable circumstances which occurred at this early period of the complaint.

Allusion has been made to her sewing in the dark, and circumstances render it almost certain that she must at that time have threaded her needle also. Sometime after this occurrence she conceived the plan, during a paroxysm, of making a bag, in which, as she said, to boil some squash. She was then seen to thread a needle in a room in which there was barely light enough to enable others to perceive what she was about, and afterwards, the same night, she was seen to do it with her eyes closed. In this condition she completed the bag, and though a little puckered, as she observed, it still answered very well to boil the squash in.

In one instance she not only arranged the table for a meal, but actually prepared a dinner in the night, with her eyes closed. She first went into the cellar in the dark, procured the vegetables, washed each kind separately, brought in wood and made a fire. While they were being boiled, she completed the arrangement of the table, and then proceeded to try the vegetables to ascertain whether they were sufficiently cooked. After repeated trials, she observed the smallest of them were done—she took them up, and after waiting a little, said the rest would do, and took them up also. They were actually very well cooked. She then remarked that S., a little girl in the family, ate milk, and procured a bowl for her—she also procured one for herself and ate it. As the family did not seat themselves at table, she became impatient, and complained that the men never were ready for their dinner. While engaged in her preparations, she observed a lamp burning in the room, and extinguished it, saying "she did not know why people wished to keep a lamp burning in the day time." On being requested to go to bed, she objected, alleging as a reason, that it was day; but was persuaded to do so by being reminded that she was not well, and that sleep would relieve her head. In the morning she

appeared as usual, totally unconscious of the transactions of the preceding night.

At first, the paroxysms occurred only in the night, and generally soon after she went to bed. As the disease advanced, they commenced earlier—she then fell asleep in the evening, sitting in her chair—or rather passed into the state of somnambulism; for her sleep, under these circumstances, was never natural. At a still later period, the attack took place at any hour during the day or evening. After she began to be affected in the day time, the fit seldom commenced when she was in bed; and even when she retired, as she often did, in this state, she usually remained quiet till the paroxysm subsided—though at times she continued to talk and sing. Sometimes she suffered two distinct paroxysms in one day."—pp. 31-41.

The general account here transcribed although sufficient for popular curiosity, is not as minute and scientific as the interests of the profession require; and we shall, therefore, introduce a detailed account of the paroxysms. It relates only to that stage of her disease in which there was extraordinary acuteness of vision.

"*General description of the Paroxysm.*—The state of somnambulism was usually preceded by a full, heavy, unpleasant feeling in the head —sometimes by headach, ringing in the ears, cold extremities, and an irresistible propensity to drowsiness, attended with a feeling as if weights were appended to the eye-lids. There was almost always a slight contraction of the eye-brows, the cheeks were flushed, and sometimes tinged with a crimson hue. By great exertions, the fit might be put off for hours after the appearance of these symptoms; but, in order to gain this reprieve, it was necessary for her to walk, or be engaged in some active employment. The most effectual preventive was exposure to the open air. The moment these precautions were relaxed, and sometimes even in the midst of her active duties, she experienced what she described as a sense of rushing to the head, attended with a loss of the power of speech and motion. If in this state she was immediately carried into the open air, the fit was often arrested; but if this was delayed a moment too long, she lost all recollection, and could not by any efforts be aroused. To a spectator she appeared like a person going quietly to sleep. Her eyes were closed, the respirations become long and deep, her attitude, and the motions of her head, resembled those of a person in a profound slumber. During the fit, the breathing, though sometimes natural, was often hurried, and attended with a peculiar moaning sound, indicative of suffering. At times the pulse was accelerated, but generally it did not vary much from the natural standard. I have remarked, that in her first paroxysm the head was hot, but such was not commonly the

case, nor was there any peculiar throbbing of the temporal arteries—the hands and feet, however, were almost invariably cold.

Her manner differed exceedingly in different paroxysms. Sometimes she engaged in her usual occupations, and then her motions were remarkably quick and impetuous—she moved with astonishing rapidity, and accomplished whatever she attempted with a celerity of which she is utterly incapable in her natural state. She frequently sat in a rocking-chair, at times nodding, and then moving her head from side to side with a kind of nervous uneasiness, the hand and fingers being at the same time affected with a sort of involuntary motion. In the intervals of reading or talking, and even when engaged in these very acts, her nods, the expressions of her countenance, and her apparent insensibility to surrounding objects, forced upon the mind the conviction that she was asleep. Occasionally she was cheerful, disposed to talk, and willing to exercise her powers; the greater part of the time she was irritable and petulant. Pain in a circumscribed spot on the left side of the head, was, I believe, always an attendant on the paroxysm, and frequently occasioned a degree of suffering almost beyond endurance. To this spot she invariably pointed as the seat of her agony when she repeated the expression, "it ought to be cut open, it ought to be cut open." Occasionally the whole system was thrown into agitation, and she presented the appearance of a person in a violent fit of hysterics.

Her eyes were generally closed, but at times they were stretched widely open, and the pupil was then very considerably dilated. These different states of the eye seemed to occasion no difference in the power of seeing—she saw apparently as well when they were closed, as she did when they were open. In the day time she always had the eyes covered with a bandage during the paroxysm, nor would she allow it to be removed for a single moment, unless the room was unusually dark. In order to test the sensibility of the eye, I took one evening a small concave mirror, and held it so that the rays proceeding from a lamp were reflected upon her closed eyelid. When the light was so diffused that the outline of the illuminated space could scarcely be distinguished, it caused, the moment it fell on the eyelid, a shock equal to that produced by an electric battery, followed by the exclamation, "why do you wish to shoot me in the eyes?" This experiment was repeated several times, and was always attended with the same result. It was also tried when she was awake, and the effect, though less striking, was very perceptible. The same degree of light thrown on my eyelids, occasioned no pain.

How far she was sensible to the presence of surrounding objects, it is very difficult to determine; indeed, facts seem to prove that she was not, in every paroxysm, alike in this respect. In the early stage of her complaint, she appeared to take little notice of persons, unless they were connected with her train of thought, and then she regarded those with her only as the representatives of the persons whom she imagined to be present. Nor did the sight or the hearing have any tendency to correct the false impression. Thus, in her first paroxysm,

she regarded me as her father, and continued to do so as long as I remained with her; but, in her subsequent fits, this idea was never revived. Her conception of persons was generally made to correspond with the idea of the place in which she conceived herself to be. She was in the habit, when well, of spending her evenings in the room with the children of the family, and it was in their company that she often imagined herself to be during the paroxysm. The questions which were at these times proposed to her to test her powers of vision, were cheerfully and readily answered, because they were questions which it was natural for children to ask; or, at least, she supposed them to proceed from children. Much that she said was also directed to them, though it was evident, at times, her conceptions and perceptions were strangely intermingled. In a paroxysm, soon after the arrival of her father, he asked her a question which she answered by addressing a little boy belonging to the family, who was not then in the room; but his knife which he placed in her hand, she immediately recognized as her father's, and wondered how that came to be in Springfield while he was in Brattleborough. At a later period of her complaint, she appeared to comprehend more of what transpired in her presence, and accordingly she obstinately refused to read cards, or submit to experiments of any kind. These trials she then evidently regarded as so many attempts to impose upon her; and in adopting this conclusion she reasoned with perfect consistency; for if she actually could see as she appeared to—if to her vision, night was converted into day, and darkness into light, while she was unconcious of any thing peculiar to herself, what could be more annoying than to be constantly teased with questions which to her senses were perfectly obvious? If a request were made of her which appeared reasonable, especially if it related to her customary duties, she readily did whatever was required.

There is abundant evidence that she recollected, during a paroxysm, circumstances which occurred in a former attack, though there was no remembrance of them in the interval. A single illustration will suffice, though many more might be given. In a paroxysm, a lady who was present, placed in her hand a bead bag which she had never before seen. She examined it, named the colors, and compared them with those of a bag belonging to a lady in the family. The latter bag being presented to her in a subsequent paroxysm, the recollection of the former was restored—she told the colors of the beads, and made the same remarks respecting the comparative value of the two bags that she had done before. I had taken measures to satisfy myself in the interval that she then remembered nothing of the first impression.

Attempts to rouse her from this state were uniformly unsuccessful. She heard, felt, and saw; but the impressions which she received through the senses had no tendency to waken her. A pailful of cold water was in one instance thrown upon her; she exclaimed, "Why do you wish to drown me!"—went to her chamber, changed her dress, and came down again. Large doses of laudanum were sometimes given her with a view to relieve her pain—it appeared to mitigate her sufferings, and she was observed uniformly to wake soon afterwards.

Excitements of every kind, and particularly attempts to draw forth her peculiar powers, invariably prolonged the fits, and generally aggravated the pain in the head.

At the termination of a paroxysm, she sunk into a profound sleep. The frown disappeared from her brow, the respirations again became long and deep, and the attitude was that of a person in undisturbed slumber. She soon began to gape and rub her eyes, and these motions were repeated after short intervals of repose. In the course of fifteen or twenty minutes from the first appearance of these symptoms, she opened her eyes, when recollection was at once restored. She then invariably reverted to the time and place at which the attack commenced, and in no instance, when under my care, manifested any knowledge of the time which had elapsed, or the circumstances which transpired during the interval.

These paroxysms were very obviously connected with the state of the stomach and digestive organs. Though the appetite was generally good, food often occasioned oppression, and she not unfrequently raised a considerable portion of what she ate. She also had headach, acidity of stomach, and most of the symptoms usually termed dyspeptic. These circumstances had not indeed attracted much attention till after the occurrence of the paroxysms; but I then found that they had existed, in a slight degree, for some time, and that lately her sufferings from this source had been very considerably aggravated. Improper food, and other causes affecting the stomach directly, I am confident, in several instances, occasioned an attack. The very first paroxysm occurred a few hours after she had eaten a large quantity of green currants; and two or three times afterwards, a paroxysm was occasioned by medicine which disturbed the stomach.

During the fit she very often called for food, particularly for apples; but she seldom awoke as soon as usual, after having gratified her appetite. At a time when she had invariably one or two paroxysms daily, I gave her an emetic, and afterwards allowed her to take but a small quantity of the simplest food; under this course she had but one slight attack for five days, and she was in every respect much better. The paroxysm which she had in this instance occurred also under circumstances illustrative of the nature of the complaint. It come on in the stage, when she was on the way to Worcester, and was preceded by sickness, to which she is very subject when riding in a close carriage."—pp. 41–51.

As that part of Miss Rider's case which has seemed the most extraordinary, was her acuteness of vision, we shall transfer to our pages the entire section devoted to that subject.

"*Experiments proving the extraordinary power of vision.*—Though no decisive experiments were at first made to establish the fact, the members of the family in which she lived were very early convinced that she saw both when her eyes were closed, and in the

dark. They were irresistably led to this conclusion, when they saw her, night after night, perform that which seemed impossible for her to do without the aid of vision, when at the same time they could discover nothing which indicated the want of sight. She never betrayed any thing like hesitancy or indecision—there was no groping, no feeling after the object which she wished to lay hold of, but the motion was quick and direct, as if perfectly aware of its precise situation. When obstacles were placed in her way, or the position of a thing was changed, she always observed it, and accommodated herself to the change.—This kind of evidence, though perfectly satisfactory to eye witnesses, is not so well calculated to produce conviction in the minds of others as tests of a different kind.

No direct trial of her powers of vision was made until Sabbath evening, Nov. 10th; when it was proposed to ascertain whether she could read with her eyes closed. She was seated in a corner of the room, the lights were placed at a distance from her, and so screened as to leave her in almost entire darkness. In this situation she read with ease a great number of cards which were presented to her, some of which were written with a pencil, and so obscurely, that in a faint light no trace could be discerned by common eyes. She told the date of coins, even when the figures were nearly obliterated. A visitor handed her a letter, with the request that she would read the motto on the seal, which she readily did, although several persons present had been unable to decipher it with the aid of a lamp. The whole of this time the eyes were, to all appearance, perfectly closed.

The second day after this exhibition of her power, she fell asleep in the morning in the act of procuring water from the pump. This was her first attack in the day time. Soon after, on going out of doors, she observed to her companion, "what a beautiful day it is, how bright the sun shines!" It was in fact quite cloudy. When asked by one of the ladies of the family to thread a needle, she refused, saying, "you can do it for yourself." Soon after, she went into a neighboring house, where there was an elderly lady to whom she often rendered this kind of assistance. This lady said, "Jane, I am old, and cannot see very well, will you thread my needle for me?" She immediately complied with the request, and threaded the needle not only at that time, but once or twice afterwards. She awoke from this paroxysm in the afternoon, and was quite distressed to find the fits beginning to affect her in the day time.

The next morning she fell asleep while I was prescribing for her, and her case having now excited considerable interest, she was visited during that and the following day by probably more than a hundred people. To this circumstance, undoubtedly, is to be attributed the unprecedented length of the paroxysm: for she did not wake till Friday morning, forty-eight hours after the attack. During this time she read a great variety of cards written and presented to her by different individuals, told the time by watches, and wrote short sentences.

For greater security, a second handkerchief was sometimes placed below the one which she wore constantly over her eyes, but apparent-

ly without causing any obstruction to the vision. She also repeated with great propriety and distinctness several pieces of poetry, some of which she had learned in childhood, but had forgotten, and others which she had merely read several years since without having ever committed them to memory. In addition to this she sung several songs, such as, "Auld Lang Syne" and "Bruce's Address to his Army," with propriety and correctness. Yet she never learned to sing, and never has been known to sing a tune when awake. She was evidently very much exhausted by these efforts, and at times her sufferings were so extreme that she could not be induced to answer any questions.

On Wednesday, Nov. 20th, I took a large black silk handkerchief, placed between the folds two pieces of cotton batting, and applied it in such a way that the cotton came directly over the eyes, and completely filled the cavity on each side of the nose—the silk was distinctly seen to be in close contact with the skin. Various names were then written on cards, both of persons with whom she was acquainted, and of those who were unknown to her, which she read as soon as they were presented to her. This was done by most of the persons in the room. In reading she always held the paper the right side up, and brought it into the line of vision. The cards were generally placed in her hand for the purpose of attracting her notice, but when her attention was excited she read equally well that which was held before her by another. I do not know that she ever read cards which *she had never seen*, when only the back was presented to her.

Being desirous, if possible, to prove that the eye was actually closed, I took two large wads of cotton, and placed them directly on the closed eyelid, and then bound them on with the handkerchief before used. The cotton filled the cavity under the eyebrow, came down to the middle of the cheek, and was in close contact with the nose. The former experiments were then repeated without any difference in the result. She also took a pencil, and, while rocking in her chair, wrote her own name, each word separately, and dotted the i. Her father, who was present, asked her to write his name. "Shall I write Little Billy or Stiff Billy," was her reply, imagining that the question was proposed by a little boy of the name of William belonging to the family. She wrote *Stiff Billy*—the two words without connection, and after writing them both, she went back and dotted the i in each. She then wrote *Springfied* under them, and after observing it a moment, smilingly remarked that she had left out a letter, and inserted the l in the proper place.

A watch enclosed in a case was handed to her, and she was requested to tell the time—after examining both sides, she opened the case, and then answered the question. Afterwards, but in the same paroxysm, a gentleman present wrote his name in characters so small that no one else could distinguish it at the usual distance from the eye. As soon as the paper was put into her hand, she pronounced the name.—It was thought that any attempt to open the eye would be indicated by

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the contraction of the skin on the forehead, but though she was closely watched, nothing of the kind was observed.

She also at this time repeated poetry and sung, as before. This she did almost every paroxysm; and though there are some pieces which she must have repeated in this way scores of times, her knowledge of them when she is awake is not in the least improved by the practice. These experiments were performed in the presence of several of the most respectable and intelligent gentlemen in town, and they were all convinced there could be no deception.

While she was in a paroxysm a few evenings afterwards, the lights were removed from her room, and the windows so secured that no object was discernible. Two books were then presented to her which had been selected for the purpose; she immediately told the titles of both, though one of them was a book she had never seen before.

Monday, Nov. 25th, she was removed to my house; but, though she had several paroxysms in the interval, nothing worthy of notice occurred till the 30th. The morning of that day, as she was engaged in her customary employments, she complained suddenly of dizziness, and seated herself in a chair, and immediately became insensible. Soon after, she applied a bandage to the eyes, went to her chamber and changed part of her dress. She then came down, and taking a basket which she had purchased the day before, and which was much soiled, remarked that it was dirty, and she would wash it. This operation she performed with as much neatness and despatch as she could have done when awake.

The room in the front part of the house she had never seen except for a few moments several months since. The shutters were closed, and it was so dark that it was impossible for any one possessing only ordinary powers of vision to distinguish the colors in the carpet. She, however, though her eyes were bandaged, noticed and commented on the various articles of furniture, and pointed out the different colors in the hearth rug. She also took up, and read several cards which were lying on the table. Soon after observing her with a skein of thread in her hand, I offered to hold it for her to wind. She immediately placed it on my hands, and took hold of the end of the thread in a manner which satisfied me she saw it, and completed the operation as skilfully and readily as if she were awake. Having left the room a moment, I found her on my return with her needle threaded, and hemming a cambric handkerchief. She however soon abandoned her work, and was then asked to read a little while aloud. Bryant's Poems were given to her; she opened the book, and turning to the "Thanatopsis," read the whole, (three pages,) and the most of it with great propriety. Something being said about her manner of reading, she observed there were parts of the piece which she did not understand, that she could read it much better if she understood it. The day before, she had procured several *samples* of calico at the shops, portions of some of which had been washed since the commencement of her paroxysm. On their being spread out before her, she not only told the shop at

which she obtained each, and named its price, but compared the part which had been washed with the piece from which it was taken, and when there was any change, pointed out the difference.

A colored girl came in and seated herself before her: she was asked if she knew that lady; she smiled and returned no answer. Some one said, "She has a beautiful complexion, has she not?" Jane laughed heartily, and said, "I should think she was somewhat tanned."

At dinner, she took her seat at the table as usual, helped herself to bread when it was offered, presented her tumbler for water, and through the whole time, did not, by her manner or actions, betray the least want of sight. After dinner the bandage which she put over her eyes in the morning, and which she had worn ever since, was taken off, and in its place a black silk handkerchief stuffed with cotton was bound on so as to fit accurately to the nose and cheeks. Though extremely reluctant on account of severe pain in the head, she was at length prevailed on to write a part of the "Snow Storm," one of the pieces which she is in the habit of repeating when asleep. She finished one stanza of six lines, and part of a second. In writing she followed for a time the ruled lines placed under her paper, but they having been displaced, she proceeded without them, continuing, however, nearly in a straight line. In one or two instances she failed to make a proper division of the poetry into lines, and several times misspelled words which she would not have done had she been awake. Twice she noticed the inaccuracy in the spelling, and corrected it at the time, but when writing the same word afterwards she fell into a similar error. A person standing behind her very carefully interposed a piece of brown paper between her eyes and the paper on which she was writing. Whenever this was done she appeared disturbed, and exclaimed, "don't, don't." For sometime I watched her narrowly to ascertain whether the bandage was constantly in place, but I could detect no change in its position.

A watch was presented to her, the face of which was concealed by a piece of brown paper placed between it and the chrystal. Instead of telling the time, she observed, "Any thing but a paper watch!"

In the evening, when the room was so dark that nothing but the position of the windows could be discerned by common eyes, a blue fancy handkerchief was placed before her, and she was asked if she did not wish for a beautiful pink handkerchief—she replied, "I hope I know blue from pink."

The next day, during a paroxysm, she went into a dark room and selected from among several letters, having different directions, the one bearing the name which she was requested to find. She was heard to take up one letter after another and examine it, till she came to the one for which she was in search, when she exclaimed, "Here it is," and brought it out. She also, with her eyes bandaged, wrote of her own accord two stanzas of poetry on a slate; the lines were straight and parallel.

One circumstance I have omitted to mention, which is, the power of imitation which she occasionally exhibits. This extends not only

to the manner, but to the language and sentiments of the persons whom she personifies: and her performances in this way are so striking, and her conceptions of character so just, that nothing can be more comical.

This, like her other extraordinary powers, is confined to the somnambulist state—at other times she does not exhibit the slightest trace of it.

Many other circumstances might be added, similar to those which have been detailed; enough, however, has been given to illustrate the peculiar features of this singular case. I have not myself been a witness of every fact here related; but I have mentioned nothing differing in kind or more remarkable in degree than I have seen with my own eyes. However extraordinary these phenomena may appear, therefore, I do not hesitate to vouch for the general accuracy of every statement."—pp. 52—65.

On the 5th of December, six months after the attack, she was removed from Springfield to the hospital at Worcester, and passed from the care of Dr. Belden to that of Dr. Woodward, whose letters to Dr. Belden, make a chapter of the narrative. While in the hospital, she had at one time, a short paroxysm of mania, terminating in hysteria.

The treatment pursued by Dr. Woodward, nearly the same as that recommended by Dr. Belden, consisted in the nitro-muriatic bath to her feet, which were always cold, Calomel in small doses, and the tinctures of guaiacum and sanguinaria as emmenagogues. Her head was shaved and blistered. The cold-dash, when it fell on the "tender spot," made her scream, and restored her to her consciousness. Leeches were also applied to her head. Finally, she took pills of myrrh and iron. Her appepite was voracious and ungovernable. She was always worse for indulging it. During her convalescence in the hospital she was restricted to a low diet. As her paroxysms became slighter, the acuteness of vision decreased. Early in February, 8 months after the attack, she was considered well.

Having presented a history of this case, sufficiently full to place all the important facts before our readers, we shall proceed with our author to one of the speculations which it suggests, to wit—

The increased acuteness of vision. This is the symptom which has excited most astonishment in those who read

many of the exaggerated accounts which found their way into the public journals. From these it would appear, that the patient could see through bodies which all the world have pronounced absolutely opake; but this was not the fact. The experiments cited by Dr. Belden show that she could not. The bandages placed over her eyes were not opake, like masks of wood or metal, but still the degree of light which they would permit to pass, must have been so small, that ordinary eyes would scarcely, perhaps, have perceived its presence, and certainly could not have discovered by it the form of any object. We have then, in this case, when divested of all exaggeration, not a little to excite our admiration. Dr. B. supposes that there was not only increased sensibility of the retina, but increased perceptivity of the mind to the luminous impression, arising from a morbid condition of that part of the brain which the phrenologists call the organ of color. She seems, however, to have taken equal cognizance of the outline of objects, and therefore, in phrenological language, the organ of form was not less excited than that of color.

This morbid sensibility of the eye is, as all physicians know, quite a common occurrence. It is generally ascribed to excessive determination of blood to the optic nerves or thalami, and Mr. Stevenson has written a small book to establish this opinion. The two worst cases, however, which have fallen under our own observation, were unattended with inflammatory symptoms, and after resisting a course of antiphlogistic measures, yielded in a great degree to tonics. Both the patients were females. The case of one possesses sufficient interest to justify the introduction of a short history of it in this place.

In the spring of 1825, we were requested to visit Miss W. aged 23, who was represented to labor under an extraordinary sensibility of both eyes to light. She had formerly used her eyes much in straw work and reading, withal leading a most sedentary life, and suffering greatly from constipation. At length her eyes became watery and intolerant of light, though but little inflamed and that at times only. She experienced,

however, a great deal of pain in her eye balls, extending back through her head; which was always augmented by exposure of the eye to light, by motion of the arms, by conversation, and by every kind of strong emotion. Her catamenia had been rather in excess. Her tongue was clean, skin cool, and head in no degree too hot.

Blood-letting, cupping, emetics, cathartics and salivation, had mitigated the pain, but left the morbid sensibility of the eyes unabated.

When we saw her, in May, 1825, she had been for several months confined in a dark room, with her eyes bandaged; and she asserted, that even exposing her face to a stream of light, her eyes being well covered, augmented the pain in her eye-balls and their orbits. It appeared, however, that it was chiefly the impress of light upon her mouth and tongue, which gave rise to this effect. In making experiments on this point, we covered her eyes with numerous folds of soft black cloth, pressed firmly upon the cheeks and brows with our own hands. In this situation she could barely tell the difference between the extremes of light and darkness, with her mouth shut; but when she opened it, although not acted on by the rays of the sun direct, she could perceive even slight variations in the quantity of light. So often had this experiment been repeated that the patient and all her friends were entirely convinced of her ability to distinguish between light and darkness by her mouth.

It may not be uninteresting to add, that after the failure of the antiphlogistic course, of which we have spoken, the patient was greatly benefited by drachm doses of rubigo ferri with aloes.

The intelligent reader will perceive that this case presents a fact, which, with several others, goes to show a connexion between the second and fifth pair of nerves. In this young woman the branches of the second and third divisions of the fifth or trifaxcial nerves, spread upon the mucous membrane of the mouth and tongue, appeared manifestly to have acquired a sensibility to light. How far, in Miss Rider's case, they

might have acquired the same sensibility, we are unable to say, but believing or inclining to believe, in the possibility of their acquiring such a specific sensibility, we would suggest whether Miss R. did not, in fact, take cognizance of bodies from the action of light upon the facial or lingual extremities of the fifth pair of nerves?

Her aberration of mind, as already intimated, was not reducible to any of the established types of mental disorder. It was *sui generis*, but not unprecedented; as many others, some of whom are mentioned, indeed, by Dr. Belden, have been affected in a similar manner. The chief peculiarity of this case, was its union with such great morbid sensibility of the eyes, a connexion not before observed in the same degree, and which is not necessary to the production of the intellectual phenomena which the case presents.

Art. VI.—The Gastric Juice.

Experiments and Observations on the Gastric Juice, and the Physiology of Digestion. By William Beaumont, M. D. Surgeon in the U. S. Army. Plattsburgh, 1833, pp. 280.

The public journals have already made our readers acquainted with the existence of Dr. Beaumont's book, in as much as the singular case of surgical disease, which remotely gave rise to it, has been made the subject of newspaper publication.

In the year 1822, when Dr. Beaumont was stationed at Mackinac, as a surgeon, a Canadian of the American Fur Company—Alexis St. Martin—accidentally received the contents of a musket loaded with duckshot, in his right side, when standing but three feet from the muzzle of the gun. The wound was terrible, and finally left a fistulous opening

into his stomach, through which the Doctor was able at pleasure to draw off the contents of that organ. This extraordinary condition suggested and favored the experiments on the gastric juice and digestion, which make up the original parts of the work before us.

A lengthened introduction, setting forth the surgical history of the case, concludes with several graphical views of the orifice, seen under different states, and an account of the manner in which the gastric juice and the chymous contents of the stomach were extracted, which was as follows.

"*Mode of extracting the Gastric Juice.*—The usual method of extracting the gastric juice, for experiment, is by placing the subject on his right side, depressing the valve within the aperture, introducing a gum-elastic tube, of the size of a large quil, five or six inches into the stomach, and then turning him on the left side, until the orifice becomes dependent. In health, and when free from food, the stomach is *usually* entirely empty, and contracted upon itself. On introducing the tube, the fluid soon begins to flow, first by drops, then in an interrupted, and sometimes in a short continuous stream. Moving the tube about, up and down, or backwards and forwards, increases the discharge. The quantity of fluid ordinarily obtained is from four drachms to one and a half or two ounces, varying with the circumstances and condition of the stomach. Its extraction is generally attended by that peculiar sensation at the pit of the stomach, termed sinking, with some degree of faintness, which renders it necessary to stop the operation. The usual time of extracting the juice is early in the morning, before he has eaten, when the stomach is empty and clean.

On laying him horizontally on his back, pressing the hand upon the hepatic region, agitating a little, and at the same time turning him to the left side, bright yellow bile appears to flow freely through the pylorus, and passes out through the tube. Sometimes it is found mixed with the gastric juice, without this operation. This is, however, seldom the case, unless it has been excited by some other cause.

The chymous fluids are easily taken out by depressing the valve within the aperture, laying the hand over the lower part of the stomach, shaking a little, and pressing upwards. In this manner, any quantity necessary for examination and experiment can be obtained.

Valve.—The valve mentioned above, is formed by a slightly inverted portion of the inner coats of the stomach, fitted exactly to fill the aperture. Its principal and most external attachment is at the upper and posterior edge of the opening. Its free portions hangs pendulous, and fills the aperture when the stomach is full, and plays up and down, simultaneously with the respiratory muscles, when empty.

On pressing down the valve when the stomach is full, the contents

flow out copiously. When the stomach is nearly empty, and quiescent, the interior of the cavity may be examined to the depth of five or six inches, if kept distended by artificial means; and the food and drinks may be seen entering it, if swallowed at this time, through the ring of the æsophagus. The perforation through the walls of the stomach, is about three inches to the left of the cardia, near the left superior termination of the great curvature. When entirely empty, the stomach contracts upon itself, and sometimes forces the valve through the orifice, together with an additional portion of the mucous membrane, which becomes completely inverted, and forms a tumour as large as a hen's egg. After lying on the left side, and sleeping a few hours, a still larger portion protrudes, and spreads out over the external integument, five or six inches in circumference, fairly exhibiting the natural rugæ, villous membrane, and mucous coat, lining the gastric cavity. This appearance is almost invariably exhibited in the morning before rising from his bed."—pp. 21–3.

We come, now, to what our author calls Preliminary Observations, which extend through 90 pages, and are divided into the following sections—*Aliment*, *Hunger and Thirst*, *Satisfaction and Satiety*, *Mastication*, *Insalivation and Deglutition*, *Digestion by the Gastric Juice*, *Appearance of the Villous Coat, and Motions of the Stomach*, *Chymification and Uses of the Bile and Pancreatic Juice*. Here, it will be perceived, is, in fact, the synopsis of a treatise on the Physiology of Digestion.

The first section, on Aliment, contains a number of sound observations, as for example,—that bulk is nearly as necessary in articles of diet as the nutrient principle; that all articles, whether vegetable or animal, are digested in the same manner, though with different degrees of rapidity; that the gastric juice is a solvent of every kind of nutritive matter, as caloric is of all bodies; and that different persons require very different quantities of food; under this head our author has given the results of a number of experiments on the comparative digestibility of different kinds of aliment. We shall extract the table entire.

"The following articles of the *materia alimentaria* have, in the course of these experiments, been submitted to the action of the stomach and the gastric fluids. I have attempted, in this table, to approximate towards a comparison of the digestibility of the several articles there mentioned. Precision, as to minutes, has not been attended to. When digestion has been accomplished two or three minutes either before or after a certain number of hours and quarters, I have set down the quarter to which it approached the nearest.

Articles of Diet.	Mode of cooking.	Meal.	With b'rd or veg. or both. Exercise. Mod.	Exercise. Inc.	Rest.	Remarks.
			h. m.	h.m	h.m.	
Tripe, soused	fried	breakfast	1 00			
Pig's feet, do.	boiled	"	1 00			
Venison steak, fresh,	broiled	"	1 35			
Codfish, dry,	boiled	dinner	2 00			
Bread & Milk,	cold	"	2 00			
Turkey,	roast'd	"	2 30			
Goose, wild,	"	"	2 30			
Pig, young,	"	"	2 30			
Hash, meat & vegetables,	warm	breakfast	2 30			
Oysters,	raw	dinner	2 45			Oys. susp'd in stom. dur'g. exp't.
do.	stewed	"	3 30			
do.	raw	breakfast	3 00			Nothing but a little dry bread or crackers taken at these meals.
do.	"	dinner	3 00			
do.	stewed	"	3 30			
Beef, fresh, fat and lean,	roast'd	"	3 30			
do.	"	"	3 00			
do.	"	breakfast	2 45			
do.	broiled	"	3 00			
do.	"	"			3 45	
do.	"	"		3 30		Exercised till fatigued.
do.	boiled	"	4 00			Morbid appearance of stomach.
do.	"	dinner		3 30		
do.	"	breakfast	3 38			Large proportion of fat.
do.	"	supper			4 00	Do.
do.	"	breakfast			4 30	Do. and in recumbent position.
do.	"	dinner	3 30			
do.	"	"			4 00	
do.	"	breakfast			4 15	
do.	"	"	3 30			
do. salted,	"	"			4 15	
do.	"	dinner	5 30			
do.	"	"	3 30			
Pork, recently salted,	"	breakfast	5 15			
do.	"	"	4 30			
do.	"	"	5 15			Became angry during exp't.
do.	"	"	6 00			Unusually full meal.
do.	"	"	4 30			
do.	"	"	4 30			
do.	"	"	4 30			
do.	"	dinner	4 30			
do.	"	breakfast		4 00		
do.	"	dinner		3 30		
do. fresh,	roast'd	"	6 30			Unusually full meal.
do. steak,	broiled	"	3 15			
do. do.	"	breakfast	4 30			
Mutton, fat & lean,	roast'd	dinner	3 15			
do.	broiled	breakfast		3 00		
do.	"	"	3 30			
do.	"	"	4 30			Morbid appearance of stomach.
do.	"	dinner	4 00			
do.	"	breakfast	4 30			Full meal, coarsely masticated.

Articles of Diet.	Mode of cooking	Meal.	With br'd or veg. or both. Exercise. Mod.	Exercise. Inc.	Rest.	Remarks.
			h. m.	h. m.	h. m.	
Eggs,	h'd bld	breakfast	3 30			Bread or bread and coffee, no veg. used with the eggs.
do.	soft bld	"	3 00			
do.	h'd bld	dinner	5 30			Morbid appearance of stomach.
do.	soft bld	breakfast	3 30			Do. do.
do.	soft bld	dinner	3 00			
Sausage,	broiled	breakfast	3 30			With soft boiled eggs.
do.	"	dinner	3 00			
do.	fried	breakfast	4 00			Muslin bag containing same kind of diet, susp'd dur'g these expt's--morbid appearance of stom. also.
do.	"	"	5 00			
do.	broiled	"	3 30			
do.	"	"		4 15		Full meal—severe exercise.
Fowls, (hens,)	boiled	"	4 00			With bread and coffee.
do.	"	dinner	4 00			With bread and water.
do.	"	"	4 00			do. do.
Veal, fresh,	broiled	breakfast	4 00			Muslin bag susp'd in stomach.
do.	"	dinner	4 00			
do.	"	breakfast	4 00			
do.	"	dinner	4 45			Morbid appearance of stomach.
do.	"	breakfast		3 45		
do.	"	dinner	4 30			
do.	"	breakfast	5 30			Morbid appearance of stomach.

	h. m.
Soup, made of fresh muscular fibre of beef and vegetables,	4 00
do. made of the hock, with vegetables, - - -	4 15
Bread, buttered, for breakfast, with coffee, [morbid appearance of stomach.] - -	4 15
do. buttered, for breakfast, with coffee, - - -	3 45
do. dry, for breakfast, with coffee, - - -	4 00
do. dry, for dinner, with dry mashed potatoes, -	3 45

Explanations to the abreviations in the preceding Table.—br'd., for bread—veg., for vegetables—mod., for moderate—inc., for increased—susp'd., for suspended—dur'g., for during—exp't., for experiment—h'rd. bld., for hard boiled—h., for hour—m., for minute, &c. The figures denote the time of digestion, under the circumstances mentioned at the head of the column."—p. 40.

The author does not consider this table complete. The section from which it is extracted, concludes with the following paragraph:—

"The *quantity* of aliment is probably of more importance than the *quality*, to ensure health. The system requires much less than is generally supplied to it. The stomach disposes of a definite quantity. If more be taken than the actual wants of the economy require, the residue remains in the stomach, and becomes a source of irritation, and produces a consequent abberration of function, or passes in the lower bowels in an undigested state, and extends to them its deleterious

influence. Dyspepsia is oftner the effect of over eating and over drinking than of any other cause."—p. 51.

Our own observations do not permit us to concur, *in extenso*, with our author in the opinion expressed in the close of this sentence. Over eating and drinking are often injurious to dyspeptics, but we must not confound this effect with the production of the disease. If a man has had his leg broken, it is injurious to the limb, for the weight of the body to be thrown upon it, though that weight did not occasion the fracture.

The second section, on Hunger and Thirst, must detain us but a moment. The author offers the following *Theory of Hunger:*—

"My impression is, that the sensation of hunger is produced by a *distention* of the gastric vessels, or that apparatus, whether vascular or glandular, which secrets the gastric juice; and is believed to be the effect of repletion by this fluid."—pp. 57–58.

For his reasonings in support of this *hypothesis*, we refer to the book itself, and, also, for his speculations on Thirst, and on Satisfaction and Satiety, which are the topics of the third section.

The fourth section, on Mastication, Insalivation and Deglutition, contains some judicious observations. The following remarks on the diffusion of food over the surface of the stomach, when introduced through the aperture of our patients stomach, are new and curious.

"The stomach will not admit of the introduction of food, even of a liquid kind, through the aperture, at a rapid rate. If a few spoonfuls of soup, or other liquid diet, be put in with a spoon or funnel, the rugæ gently closes upon it, and gradually diffuses it through the gastric cavity, entirely excluding more during this action. When a relaxation takes place, another quantity will be received in the same manner.

If the valvular portion of the stomach be depressed, and solid food be introduced, either in entire pieces, or finely divided quantities, the same gentle contraction, or grasping motion, takes place, and continues for fifty or eighty seconds; and will not allow of the introduction of another quantity until the above time has elapsed; when the valve may again be depressed, and more food be put in. Food and drinks will be received through the aperture no faster even when the

stomach is entirely empty, than they are ordinarily received through the œsophagus.

When the subject of these experiments is so placed that the cardia can be seen and he be allowed to swallow a mouthful of food, the same contraction of the stomach, and closing upon the bolus, is invariably observed to take place at the œsophageal ring."—pp. 71–2.

The fifth section, on Digestion and the Gastric Juice, is one of considerable interest. The following conclusion, as to the length of time required for chymification, is, no doubt, true, as far as it regards the patient St. Martin:—

"The length of time consumed in the operation is various. It depends upon the quantity or quality of the ingestæ, the healthy or diseased state of the stomach, &c. In the various experiments which I have made, the medium time may be calculated at about three and a half hours."—p. 73.

The next section sets forth the results of Dr. Beaumont's experiments on the temperature of St. Martin's stomach, during digestion and exercise:—

"It has been suggested by many a physiologist, and positively asserted by some, that there is considerable increase of the temperature of the stomach during the digestion of a meal. But from the result of a great number of experiments and examinations, made with a view of ascertaining the truth of this opinion, in the empty and full state of the organ, and during different stages of chymification, I am convinced that there is no alteration of temperature, unless some other circumstance should produce it. Active exercise always elevates the temperature of the stomach, whether fasting or full, about one and a half degrees."—pp. 73–4.

We come now to the theories of Digestion. Our author adopts and confirms that of Spallanzani, which teaches that the stomach secretes a fluid which is the solvent of our food, and to which we have already referred. This fluid Dr. B. obtained, at pleasure, from the stomach of his patient, in the manner already pointed out.

In the year 1833, two distinguished professors of the University of Virginia, Emmett and Dunglison, analyzed a quantity of this fluid, and found it to contain, free *Muriatic and*

Acetic acids, Phosphates and Muriates, with bases of *Potassa, soda, magnesia*, and *lime*, and an *animal matter soluble in cold water but insoluble in hot.* The quantity of *muriatic acid* was so great as to astonish our experimenters. On the page following that in which he sets forth the above results, we came to an 'examination of the gastric fluid' by our learned and able friend, Professor Silliman of Yale College, but were disappointed in the results obtained. The principal of these was the existence of free *muriatic acid.*

We shall make no apology for the length of the following extract:—

"I think I am warranted, from the result of all the experiments, in saying, that the gastric juice, so far from being "inert as water," as some authors assert, is the most general solvent in nature, of alimentary matter—even the hardest bone cannot withstand its action. It is capable, *even out of the stomach* of effecting perfect digestion, with the aid of due and uniform degrees of heat, (100° Fahrenheit,) and gentle agitation, as will be seen in the following experiments.

The fact that alimentary matter is *transformed*, in the stomach, into chyme, is now pretty generally conceded. The peculiar process by which the change is effected, has been, by many, considered a problem in physiology. Without pretending to explain the exact *modus operandi* of the gastric fluid, yet I am impelled by the weight of evidence, afforded by the experiments, deductions and opinions of the ablest physiologist, but more by direct experiment, to conclude that the change effected by it on aliment is *purely chemical.* We must, I think, regard this fluid as a chemical agent, and its operation as a chemical action. It is certainly every way analogous to it; and I can see no more objection to accounting for the change effected on the food, on the supposition of a chemical process, than I do in accounting for the various and diversified modifications of matter, which are operated on in the same way. The decay of the dead bodies is a chemical operation, separating it into its elementary principles—and why not the solution of aliment in the stomach, and its ultimate assimilation into fibrine, gelantine and albumen? Matter, in a natural sense, is indestructible. It may be differently combined; and these combinations are chemical changes. It is well known that all organic bodies are composed of very few simple principles, or substances, modified by excess or diminution of some of their constituents.

The gastric juice appears to be secreted from numberless vessels, distinct and separate from the mucous follicles. These vessels, when examined with a microscope, appear in the shape of small lucid points, or very fine papillæ, situated in the intertices of the follicles. They discharge their fluid only when solicited to do so, by the presence of aliment, or by mechanical irritation.

Pure gastric juice, when taken directly out of the stomach of a healthy adult, unmixed with any other fluid, save a portion of the mucous of the stomach, with which it is most commonly, and perhaps always combined, is a clear, transparent fluid; inodorous; a little saltish; and very perceptibly acid. Its taste, when applied to the tongue, is simi'ar to thin mucilaginous water, slightly asidulated with muriatic acid. It is readily diffusible in water, wine or spirits; slightly effervesces with alkalis; and is an effectual solvent of the ***materia alimentaria.*** It possesses the property of coagulating albumen, in an eminent degree; is powerfully antiseptic, checking the putrefaction of meat; and effectually restorative of healthy action, when applied to old, fœtid sores, and foul, ulcerating surfaces.

Saliva and mucus are sometimes abundantly mixed with the gastric juice. The mucous may be separated, by filtering the mixture through fine linen or muslin cambric. The gastric juice, and part of the saliva will pass through, while the mucus, and spumous or frothy part of the saliva, remains on the filter. When not separated by the filter, the mucus gives a ropiness to the fluid, that does not belong to the gastric juice, and soon falls to the bottom, in loose, white flocculi. Saliva imparts to the gastric juice, an azure tinge, and frothy appearance; and, when in large proportion, renders it fœtid in a few days; whereas the *pure* gastric juice will keep for many months, without becoming fœtid.

The gastric juice does not accumulate in the cavity of the stomach, until alimentary matter be received, and excite its vessels to discharge their contents, for the immediate purpose of digestion. It then begins to exude from its proper vessels, and increases in proportion to the quantity of aliment *naturally* required, and received. A definite proportion of aliment, only, can be perfectly digested in a given quantity of the fluid. From experiments on artificial digestion, it appears that the proportion of juice to the ingestæ, is greater than is generally supposed. Its action on food is indicative of its chemical character. Like other chemical agents, it *decomposes* or *dissolves*, and combines with, a fixed and definite quanity of matter, when its action ceases. When the juice becomes *saturated*, it refuses to dissolve more; and, if an excess of food have been taken, the residue remains in the stomach, or passes into the bowels, in a crude state, and frequently becomes a source of nervous irritation, pain and disease, for a long time; or until the ***vis medicatrix naturæ*** restores the vessels of this viscus to their natural and healthy action—either with or without the aid of medicine.

Such are the appearance and properties of the gastric juice; though it is not always to be obtained pure. It varies with the changing condition of the stomach. These variations, however, depend upon the admixture of other fluids, such as saliva, water, mucus, and sometimes bile, and, perhaps, pancreatic juice. The special solvent itself—the ***gastric juice***—is, probably, invariably the same substance. Derangement of the digestive organs, slight febrile excitement, fright, or any sudden affection of the passions, cause material alterations in

its appearance. Overburthening the stomach produces acidity and rancidity in this organ, and retards the solvent action of the gastric juice. General febrile irritation seems entirely to suspend its secretion into the gastric cavity; and renders the villous coat dry, red and irritable. Under such circumstances, it will not respond to the call of alimentary stimulus. Fear and anger check its secretion, also:—the latter causes an influx of bile into the stomach, which impairs its solvent properties.

When food is received into the stomach, the gastric vessels are excited by its stimulus to discharge their contents, when chymification commences. It has been a favorite opinion of authors, that food, after it has been received into the stomach, should "remain there a short period before it undergoes any change;"* the common estimate is one hour. But this is an erroneous conclusion, arising from inaccuracy of observation. Why should it remain there, unchanged? It has been received into the organ which is to effect an important change upon it —the gastric juice is ready to commence its work of solution soon after the first mouthful is swallowed; and, certainly, if we admit that the gastric juice performs the office of a chemical agent, which most physiologists allow, it is contrary to all our notions of chemical action, to allow it one moment to rest. It must commence its operation immediately. That it does so, is distinctly manifested by close observation of its action on food, in the healthy stomach."—pp. 83–7.

Dr. B. considers that moderate exercise conduces to digestion, by elevating, which in the case of St. Martin he ascertained it does, the temperature of the stomach about a degree and a half of Fahrenheit. The following paragraph appears to us to require elucidation:—

"Exercise, sufficient to produce moderate perspiration, increases the secretions from the gastric cavity, and produces an accumulation of a limpid fluid, within the stomach, slightly acid, and possessing the solvent properties of the gastric juice in an inferior degree. This is probably a mixed fluid, a small proportion of which is gastric juice."—p. 94.

Is the bile ever found in the stomach in a state of health? was formerly among the standing topics of debate in our medical societies. Dr. B. has made experiments and observations touching this matter, on his patient St. Martin, the results of which are set forth in the succeeding extract:—

"Bile is not essential to chymification. It is seldom found in the

*Paris On Diet, p. 39.

stomach, except under peculiar circumstances. I have observed that when the use of fat or oily food has been persevered in for some time, there is generally the presence of bile in the gastric fluids. Whether this be a pathological phenonenon, induced by the peculiarly indigestible nature of oily food; or whether it be a provision of nature, to assist the chymification of this particular kind of diet, I have not as yet satisfied myself. Oil is affected by the gastric juice with considerable difficulty. The alkaline properties of the bile may render it more susceptible of solution in this fluid, by altering its chemical character. Irritation of the pyloric extremity of the stomach with the end of the elastic tube, or the bulb of the thermometer, generally occasions a flow of bile into this organ. External agitation, by kneading with the hand, on the right side, over the regions of the liver and pylorus, produces the same effect. It may be laid down as a general rule, however, subject to the exceptions above mentioned, that bile is not necessary to the chymification of food in the stomach. MAGENDIE says, "I believe that in certain morbid conditions, the bile is not introduced into this organ," (the stomach;) inferring, that in a healthy state, it is always to be found there. There can hardly be a greater mistake. With the exceptions that I have mentioned, it is never found in the gastric cavity, in a state of health; and it is only in "certain morbid conditions" that it is found there."—p. 95.

The following paragraphs are deserving of attention:—

"The progress of chyme from the stomach is gradual. Portions of chyme, as they become formed, pass out, and are succeeded by other portions. In the early stages, the passage of chyme into the duodenum, is more slowly effected than in the later stages. At first, it is more mixed with the undigested portions of aliment, and is probably separated with difficulty, by the powers of the stomach. In the later stages, as the whole mass becomes more chymified, and fitted for the translation, the process is more rapid; and is accelerated by a peculiar contraction of the stomach, a description of which will be found in the next section. It appears to be a provision of nature, that the chyme, towards the latter stages of its formation, should become more stimulating, and operate on the pyloric extremity of the stomach, so as to produce this peculiar contraction.

After the expulsion of the last particles of chyme, the stomach becomes quiescent, and no more juice is secreted, until a fresh supply of food is presented for its action, or some other mechanical irritation is applied to its internal coat.

Water and alcohol are not affected by the gastric juice. Fluids, of all kinds, are subject to the same exemption, unless they hold in solution or suspension some animal or vegetable aliment. Fluids pass from the stomach very soon after they are received, either by absorption, or through the pylorus."—pp. 96–7.

The section on the appearance of the inner coat of the

stomach, as seen in St. Martin, and the influence of different kinds of irritation on the secretion of the gastric juice, is among the most interesting portions of our author's book.

"The inner coat of the stomach, in its natural and healthy state, is of a light, or pale pink colour, varying in its hues, according to its full or empty state. It is of a soft, or velvet-like appearance, and is constantly covered with a very thin, transparent, viscid mucous, lining the whole interior of the organ.

Immediately beneath the mucous coat, and apparently incorporated with the villous membrane, appear small, spheroidal, or oval shaped, glandular bodies, from which the mucous fluid appears to be secreted.

By applying aliment, or other irritants, to the internal coat of the stomach, and observing the effect through a magnifying glass, innumerable minute lucid points, and very fine nervous or vascular papillæ, can be seen arising from the villous membrane, and protruding through the mucous coat, from which distills a pure, limpid, colourless, slightly viscid fluid. The *fluid*, thus excited, is invariably distinctly acid. The *mucous* of the stomach is less fluid, more viscid or albuminous, semi-opaque, sometimes a little saltish, and does not possess the slightest character of acidity. On applying the tongue to the mucous coat of the stomach, in its empty, unirritated state, no acid taste can be perceived. When food, or other irritants, have been applied to the villous membrane, and the gastric papillæ excited, the acid taste is immediately perceptible. These papillæ, I am convinced, from observation, form a part of what is called by authors, the villi of the stomach. Other vessels, perhaps obsorbing as well as secretory, compose the remainder. That some portion of the villi form the excretory ducts of the vessels, or glands, I have not the least doubt, from innumerable, ocular examinations of the process of secretion of gastric juice. The invariable effect of applying aliment to the internal, but exposed part of the gastric membrane, when in a healthy condition, has been the exudation of the solvent fluid, from the above mentioned papillæ.—Though the *apertures* of these vessels could not be seen, even with the assistance of the best microscopes that could be obtained; yet the points from which the fluid issued was clearly indicated by the gradual appearance of innumerable, very fine, lucid specks, rising through the transparent mucous coat, and seeming to burst, and discharge themselves upon the very points of the papillæ, diffusing a limid, thin fluid over the whole interior gastric surface. This appearance is conspicuous only during alimentation, or chymification. These lucid points, I have no doubt, are the termination of the excretory ducts of the gastric vessels or glands, though the closest and most accurate observation may never be able to discern their distinct apertures.

The fluid, so discharged, is absorbed by the aliment in contact, or

collects in small drops, and trickles down the sides of the stomach, to the more depending parts, and there mingles with the food, or whatever else may be contained in the gastric cavity. This fluid, the efficient cause of digestion—the true gastric juice of SPALLANZANI, I have no doubt—has generally been obtained, for experiment, by mechanical irritation of the internal coat of the stomach, produced by the introduction of a gum-elastic tube, through which it has been procured.

The gastric juice never appears to be accumulated in the cavity of the stomach while fasting; and is seldom, if ever, discharged from its proper secerning vessels, except when excited by the natural stimulus of aliment, mechanical irritation of tubes, or other excitants. When aliment is received, the juice is given out in exact proportion to its requirements for solution, except when more food has been taken than is necessary for the wants of the system.

When mechanical irritation by a non-digestible substance, as the elastic tube, stem of the thermometer, &c. has been used, the secretion is probably less than when the irritation has been produced by such substances, as are readily dissolved in the gastric juice. Alimentary stimulus, when taken into the stomach, is diffused over the whole villous surface, and excites the gastric vessels, generally, to excrete their fluids copiously; whereas the irritation of tubes, &c. is local, and produces only a partial excitement of the vessels, and a scanty flow of the gastric juice. Hence, the slowness in obtaining the clear fluid from the empty stomach, through the tube. I have never, on numerous trials, been able to obtain, at any one time, more than one and a half, or two ounces of this fluid, after the stomach had disposed of its alimentary matters, however long the period of abstinence had been. The discharge of this small quantity has generally been excited by the introduction of the tube. Ten, fifteen, or more minutes, were necessary to collect even this small quantity. Whenever fluid was obtained in larger quantity, as was sometimes the case, it invariably contained more than the usual quantity of mucus.

On viewing the interior of the stomach, the peculiar formation of the inner coats are distinctly exhibited. When empty, the rugæ appear irregularly folded upon each other, almost in a quiesent state, of a pale pink colour, with the surface merely lubricated with mucus. On the application of aliment, the action of the vessels is increased; the colour brightened; and the vermicular motions excited. The small gastric papillæ begin to discharge a clear, transparent fluid, (the alimentary solvent,) which continues abundantly to accumulate, as aliment is received for digestion.

If the mucous covering of the villous coat be wiped off, with a sponge or handkerchief, during the period of chymification, the membrane appears roughish, of deep pink colour at first; but in a few seconds, the follicles and fine papillæ begin to pour out their respective fluids, which, being diffused over the parts abraded of mucus, restore to them their peculiar soft and velvet-like coat, and pale pink colour, corresponding with the undisturbed portions of the membrane; and

the gastric juice goes on accumulating, and trickles down the sides of the stomach again.

If the membrane be wiped off when the stomach is empty, or during the period of fasting, a similar roughness, and deepened colour appear, though in a less degree; and the mucous exudation is more slowly restored. The follicles appear to swell more gradually. The fluids do not accumulate in quantity sufficient to trickle down, as during the time of chymification. The mucous coat only, appears to be restored.

The foregoing, I believe to be the natural appearances of the internal coat of the stomach, in a healthy condition of the system."—pp. 103—7.

On the peristaltic motions of the stomach, we have the following observations:

"These contractions and relaxations of the muscular fasciculi, do not observe any very *exact* mode. Their motions are modified by various circumstances, such as the stimulant or non-stimulant property of the ingestæ, the healthy or unhealthy state of the internal coat of the stomach; by exercise, and by repose, &c., &c.

The ordinary course and direction of the revolutions of the food, are first, after passing the œsophageal ring, from right to left, along the small arch; thence, through the large curvature, from left to right. The bolus, as it enters the cardia, turns to the left; passes the aperture; descends into the splenic extremity; and follows the great curvature towards the pyloric end. It then returns, in the course of the smaller curvature, makes its appearance again at the aperture, in its descent into the great curvature, to perform similar revolutions.

Such I have ascertained to be the revolutions of the contents of the stomach, from being able to identify particular portions of food, and from the fact, that the bulb of the thermometer, which has been frequently introduced during chymification, invariably indicates the same movements. These revolutions are completed in from one to three minutes. They are probably induced, in a great measure, by the circular or transverse muscles of the stomach, as indicated by the spiral motion of the thermometer, both in descending to the pyloric portion, and ascending to the splenic.† These motions are slower at first than after chymification has considerably advanced.

While these revolutions of the contents of the stomach are progressing, the trituration or agitation is also going on. There is a perfect admixture of the whole ingestæ, during the period of alimentation and chymification. There is nothing of the distinct lines of separation between old and new food, and peculiar central or peripheral situation of crude, as distinguished from chymified aliment, said to have been observed by Philip, Magendie and others, in their experiments on

† The terms "descending" and "ascending," are used here, as well as in many other places, relatively; because the examinations were generally made while the man was lying on his right side.

dogs and rabbits, to be seen in the human stomach; at least in that of the subject of these experiments. The whole contents of the stomach, until chymification be nearly complete, exhibit a heterogenous mass of solids and fluids; hard and soft; course and fine; crude and chymified; all intimately mixed, and circulating promiscuously through the gastric cavity, like the mixed contents of a closed vessel, gently agitated, or turned in the hand.

If a mouthful of some tenacious food be swallowed, after digestion is considerably advanced, it will be seen passing the opening, to the great curvature; and in the course of about one and a half or two miutes, it will re-appear, with the general circulating contents, more or less broken to pieces, or divided into smaller pieces; and very soon loses its identity. This agitating motion has the effect, and is undoubtedly designed, to break up the bolus, as well as to separate the external and chymified portion of the particles of food, and allow the undigested portions to come in contact with the gastric juice' the proper solvent. If the motions were simply revolutionary, the central portions would retain their situation, until the outer, or chymified part, had passed into the duodeum, in successive parcels; which, it is evident, would very much retard the process of digestion.

As the food becomes more and more changed from its crude to its chymified state, the accidity of the gastric fluids is considerably increased; more so in vegetable than animal diet; and the general contractile force of the muscles of the stomach is augmented in every direction; giving the contained fluids an impulse towards the pylorus.

It is probable, that from the very commencement of chymification —from the time that food is received into the stomach—until that organ becomes empty, portions of chyme are constantly passing into the duodenum, through the pyloric orifice, as the mass is presented at each successive revolution. I infer this, from the fact that the volume is constantly decreasing. This decrease of volume, however, is slow at first; but is rapidly accelerated towards the conclusion of digestion, when the whole mass becomes more or less chymified. This accelerated expulsion appears to be effected by a peculiar action of the transverse muscles, or rather of the ***transverse band,*** as described by SPALLANZANI, HALLER, COOPER, Sir E. HOME, and others, in their experiments on animals. This band is situated near the commencement of the more conically shaped part of the pyloric extremity, three or four inches from the smaller end. In attempting to pass a long glass thermometer tube, through the aperture, into the pyloric portion of the stomach, during the latter stages of digestion, a forcible contraction is first perceived at this point, and the bulb is stopped. In a short time, there is a gentle relaxation, when the bulb passes without difficulty, and appears to be drawn, quite forcibly, for three or four inches, towards the pyloric end. It is then released, and forced back, or suffered to rise again; at the same time, giving to the tube a circular, or rather spiral motion, and frequently revolving it completely over. These motions are distinctly indicated, and strongly felt, in holding the end of the tube between the thumb and finger; and it requires a

pretty forcible grasp to prevent it from slipping from the hand, and being drawn suddenly down to the pyloric extremity. When the tube is left to its own direction, at these periods of contraction, it is drawn in, nearly its whole length, to the depth of ten inches: and when drawn back, requires considerable force, and gives to the fingers the sensation of a strong *suction* power, like drawing the piston from an exhausted tube. This ceases as soon as the relaxation occurs, and the tube rises again, of its own accord, three or four inches, when the bulb seems to be obstructed from rising further; but if pulled up an inch or two, through the stricture, it moves freely in all directions in the cardiac portions, and mostly inclines to the splenic extremity, though not disposed to make its exit at the aperture.

Above the contracting band, and towards the splenic portion of the stomach, the suction or grasping motion is not perceptible; but when the bulb is pushed down to this point, it is distinctly felt to be grasped, and confined in its movements.

These peculiar motions and contractions continue until the stomach is perfectly empty, and not a particle of food or chyme remains; when all becomes quiescent again.

If the bulb of the thermometer be suffered to be drawn down to the pyloric extremity, and detained there for a short time, or if the experiment be repeated too frequently, it causes severe distress, and a sensation like cramp, or spasm, which ceases on withdrawing the tube; but leaves a sense of soreness and tenderness at the pit of the stomach.

These peculiar contractions and relaxations, mentioned above, succeed each other, at irregular intervals, of from two to four or five minutes. Simultaneously with the contractions, there is a general shortening of the fibres of the stomach. This organ contracts upon itself in every direction; and its contents are compressed with much force. The valvular portion of the stomach is firmly thrust into the aperture; closing the orifice; preventing the egress of aliment; and obstructing the view of the interior. During the intervals of relaxation, the rugæ perform their vermicular actions, the undulatory motions of the fluids continue, and the alimentary and chymous mass appear, revolving as before, promiscuously mixed, through the splenic and cardiac portions.

All these facts, taken together, will, I think, rationally admit of the following explanation. The longitudinal muscles of the whole stomach, with the assistance of the transverse ones of the splenic and central portions, carry the contents into the pyloric extremity. The circular or transverse muscles contract progressively, from left to right. When the impulse arrives at the *transverse band*, this is excited to a more forcible contraction, and, closing upon the alimentary matter and fluids contained in the pyloric end, prevents their regurgitation. The muscles of the pyloric end, now contracting upon the contents detained there, separate and expel some portions of the chyme. It appears that the crude food excites the contractile power of the pylorus, so as to prevent its passage into the duodenum, while the thinner, chymified

portion is pressed through the valve, into the intestine. After the contractile impulse is carried to the pyloric extremity, the circular band, and all the transverse muscles, become relaxed, and a contraction commences in a reversed direction, from right to left, and carries the contents again to the splenic extremity, to undergo similar revolutions.

It would appear, then, that the discharge of the chyme from the stomach, is effected by *mechanical* impulse. But, I confess, I do not like to give an opinion. I state the circumstances as they have occurred. The idea of mechanical force, I admit, is liable to objection; but, perhaps, not more so than that of the *selecting* power of the pylorus. Whatever bias I may have in favour of the former method, has been forced upon me by the deductions of experiment and observation."—pp. 110—116.

The last section of the preliminary observations, on Chylification, need not detain us, as our great object is to present what is new in Dr. Beaumont's book. The aperture in St. Martin's *stomach*, would of course afford but little aid in an inquiry into the functions of the *bowels, liver and pancreas*. It is true that our author attempted to form chyle out of the body by the addition of bile, muriatic acid and pancreatic juice, but with no striking result. With these remarks we conclude our account of the first part of the work before us, and now proceed to a notice of the *Experiments and Observations*.

We shall not attempt to follow our author through the narrative of his several series of experiments, the first of which was performed in 1825, the last in 1833. We have stated most of the results obtained by him, in our copious extracts from his preliminary observations. The question whether the gastric juice is secreted by the stimulus of food, very properly attracted Dr. B's attention, and as it is one of interest, we shall extract entire the experiments which relate to it.

"To ascertain whether the Gastric Juice be *accumulated* in the stomach, during periods of fasting, or even from the immediate and direct influence of hunger, I made the following experiments.

Experiment 9.—*Dec.* 5, 1829.—At 8 o'clock, A. M., after twelve hours abstinence from either food or drinks, I introduced, at the perforation, a gum-elastic tube, and drew off a drachm or two only of the gastric juice.—There was no accumulation in the stomach.

Experiment 10.—*Dec.* 12.—At 3 o'clock, P. M., introduced tube—

could procure two or three drachms only—this was secreted on the irritation of the tube. Stomach contained none in a free state.

Experiment 11.—*Dec.* 14.—At 10 o'clock, P. M., after eighteen hours fasting, introduced tube, and drew off one and a half ounces of gastric juice. It was clear, and almost transparent; tasted a little saltish and acid, when applied to the tongue, similar to thin mucilage of gum arabic, slightly acidulated with muriatic acid. There was no accumulation in the stomach when the tube was introduced.

Experiment 12.—*March* 13, 1830.—At 10 o'clock, A. M.—stomach empty—introduced tube; but was unable to obtain any gastric juice. On the application of a few crumbs of bread to the inner surface of the stomach, the juice began slowly to accumulate, and flow through the tube. The crumbs of bread adhered to the mucous coat, soon became soft, and began to dissolve and digest. On viewing the villous membrane *before* applying the bread crumbs, the mucous coat and subjacent follicles only, could be observed; but immediately *afterwards*, small, sharp papillæ, and minute lucid points, situated in the interstices of, and less than, the mucous follicles, became visible; from which exuded a clear, transparent liquor. It then began to run through the tube.

Experiment 13.—*March* 18.—At 6 o'clock, P. M., after fasting from 8 o'clock, A. M., introduced tube—obtained one and a half ounces gastric juice, after having kept up the irritation, by moving the tube from point to point, for twelve or fifteen minutes. No accumulation of free juice in the stomach.

Experiment 14.—*Jan.* 26, 1831.—At 9 o'clock, A. M.—stomach empty—extracted one ounce gastric, slowly through the tube, with the usual admixture of mucus. Introduced food, and it began directly to flow more freely through the tube.

Experiment. 15—*Jan.* 27.—At 8 o'clock, A. M.—stomach empty—introduced elastic tube, and obtained one and a half drachms of gastric juice, by very slow distillation. Applied crumbs of bread to the villous coat, and the juice began immediately to flow through the tube.

Experiment 16.—*March* 6.—At 8 o'clock, A. M., extracted two ounces gastric juice, and added it to two ounces of *Madeira wine.* No visible change was produced—no coagulæ formed. They united, like pure water and wine. Heat produced no other effect.

Experiment 17.—*March* 7.—At 6 o'clock, P. M.—stomach empty—extracted one and a half ounces of juice, and mixed it with the same quantity of *Jamaica spirits.* Effect same as with wine.

Experiment 18.—*March* 8.—At 8 o'clock, A. M.—stomach empty—extracted one and a half ounces of gastric juice.

Experiment 19.—*March* 12.—At 9 o'clock, A. M.—stomach empty

—extracted one and a half ounces of gastric juice. Put this in a bottle.

Experiment 20.—*March* 13.—At 11 o'clock, A. M.—stomach empty—extracted two ounces of juice.

Experiment 21.—*March* 14.—At 12 o'clock, M.—stomach empty—extracted two ounces of juice.

Experiment 22.—*March* 15.—At 4 o'clock, P. M.—stomach empty—extracted one and a half ounces gastric juice.

Experiment 23.—*March* 16.—At 5 o'clock, P. M., introduced tube—could obtain no clear gastric juice. A little acrid fluid and frothy mucus, only, could be extracted. Villous membrane red and dry. St. Martin complained of some headache, pain and distress about the scrobiculus cordis, lassitude and loss of appetite. Directed him to take half an ounce of *tincture of aloes and myrrh*, at 9 o'clock, P. M. This moved his bowels several times next morning. Little or no change was apparent in the appearance of the inner coat of the stomach; if any, it was a little more moist, and a shade paler, after the operation of the tincture. Gastric juice could again be obtained, but in less than usual quantity.

It would seem, from the preceding experiments, that the stomach contains *no gastric juice*, in a free state, when aliment is not present. Any digestible or irritating substance, when applied to the internal coat, excites the action of the gastric vessels. Hence, I infer that the fluid, in these experiments, was incited to discharge itself by the irritation of the tube used in extracting it.

If, as is contended for by some, a *part* of the fluid be discharged into the stomach during a fast, I see no reason why nature should withhold the other part. If we may be allowed to argue, independent of more certain data, one great objection to the opinion that the stomach contains gastric juice, in a free state, when food is witholden from it, exists in the danger of its passing out through the pyloric orifice; and thus depriving the succeeding meal of the benefit of its solvent action. It is probable that the pyloric orifice opposes no resistance to its egress; but is obedient to its summons. In this way we may account for its admitting chyme, which is an admixture, or rather, combination, of gastric juice and food, to obey the expulsive motions of the stomach, and pass out. They both appear to excite the peculiar contraction of the pyloric end of the stomach, mentioned in a former part of this work. Besides, there would be danger of the gastric juice being weakened, by the introduction of large quantities of water, or other fluids, in the intervals of eating, and thus lose its energy, and concentrated solvent properties.

The last experiment has considerable pathological importance. In febrile diathesis, very little or no gastric juice is secreted. Hence, the importance of withholding food from the stomach in febrile complaints. It can afford no nourishment; but is actually a source of irritation to that organ, and, consequently, to the whole system. No

solvent can be secreted under these circumstances; and food is as insoluble in the stomach, as lead would be under ordinary circumstances."—pp. 131—38.

We may add that on a variety of occasions, Dr. B. perceived that irritation of the mucous membrane of the stomach, was followed by an immediate secretion.

From the 52d experiment of his last series, our author concludes—

"That *bile* accelerates the solution of oil, by the gastric juice; and I have no doubt, it facilitates the chymification of all fatty and oily aliments; and is required, and necessarily called into the stomach *only* for that purpose. This has been frequently indicated in the course of these experiments, by the effect which it has produced on fatty or oily aliments, when adventitiously mixed with gastric juice."—p. 264.

The following are the general and particular inferences which our author makes from all his experiments:

Inferences, from the foregoing Experiments and Observations.

1. "That *animal* and *farinaceous* aliments are more easy of digestion than *culinary vegetable.*
2. That the susceptibility of digestion does not, however, depend altogether upon *natural* or *chemical* distinctions.
3. That digestion is facilitated by *minuteness* of *division* and *tenderness* of *fibre*, and retarded by opposite qualities.
4. That the *ultimate principles* of aliment are always the same, from whatever food they may be obtained.
5. That the action of the stomach, and its fluids are the same on *all kinds* of diet.
6. That the *digestibility* of aliment does not depend upon the *quantity* of nutrient principles that it contains.
7. That the *quantity* of food generally taken, is more than the wants of the system require; and that such excess, if persevered in, generally produces, not only functional aberration, but disease of the coats of the stomach.
8. That *bulk*, as well as *nutriment*, is necessary to the articles of diet.
9. That *oily* food is difficult of digestion, though it contains a large proportion of nutrient principles.
10. That the *time* required for the digestion of food, is various, depending upon the quantity and quality of the food, of the stomach, &c.; but that the time ordinarily required for the disposal of a moderate meal of the fibrous parts of meat, with bread, &c., is from three to three and a half hours.

11. That *solid* food, of a certain texture, is easier of digestion, than *fluid.*

12. That stimulating *condiments* are injurious to the healthy stomach.

13. That the use of *ardent spirits always* produces disease of the stomach, if persevered in.

14. That *hunger* is the effect of *distention* of the vessels that secrete the gastric juice.

15. That the processes of *mastication, insalivation* and *deglutition,* in an abstract point of view, do not, in any way, affect the digestion of food; or, other words, when food is introduced directly into the stomach, in a finely divided state, without these previous steps, it is as readily and as perfectly digested as when they have been taken.

16. That *saliva* does not possess the properties of an alimentary solvent.

17. That the *first* stage of digestion is effected in the stomach.

18. That the natural *temperature* of the stomach is 100 deg. Fahrenheit.

19. That the temperature is *not elevated* by the indigestion of food.

20. That *exercise elevates* the temperature; and that *sleep* or *rest,* in a recumbent position, *depresses* it.

21. That the *agent* of chymification is the *Gastric Juice.*

22. That it acts as a *solvent* of food, and alters its properties.

23. That its action is facilitated by the *warmth* and *motions* of the stomach.

24. That it contains free *Muriatic Acid* and some other *chemical* principles.

25. That it is never found *free* in the gastric cavity; but is always excited to discharge itself by the introduction of *food,* or other irritants.

26. That it is secreted from vessels distinct from the mucous follicles.

27. That it is seldom obtained pure, but is generally mixed with mucus, and sometimes with saliva. When pure, it is capable of being kept for months, and perhaps for years.*

28. That it *coagulates* albumen, and afterwards *dissolves coagulæ.*

29. That it *checks* the progress of putrefaction.

30. That the pure gastric juice is fluid, *clear* and *transparent;* without *odour;* a little *salt,* and perceptibly *acid.*

31. That like other chemical agents, it *commences* its action on food, as soon as it comes in *contact* with it.

32. That it is capable of *combining* with a certain and fixed *quantity* of food, and when more aliment is presented for its action than it will dissolve, disturbance of the stomach, or "indigestion," will ensue.

* I have now (Nov. 1, 1833) in my possession, some clear gastric juice, possessing all its original properties, unchanged and undiminished, which was taken from the stomach in Dec. 1832, about eleven months ago, and has been kept tightly corked in vials.

33. That it becomes intimately *mixed* and *blended* with the ingestæ in the stomach, by the motions of that organ.

34. That it is *invariably* the *same substance*, modified only by *admixture* with other fluids.

35. That *gentle exercise* facilitates the digestion of food.

36. That *bile* is not ordinarily found *in the stomach*, and is *not* commonly *necessary* for the digestion of food; but

37. That, when *oily* food has been used, it assists its digestion.

38. That *chyme* is *homogeneous*, but variable in its *colour* and *consistence.*

39. That towards the *latter stages* of chymification, it becomes more *acid* and *stimulating*, and passes more rapidly from the stomach.

40. That *water*, *ardent spirits*, and most other *fluids* are not affected by the gastric juice, but pass from the stomach soon after they have been received.

41. That the *inner coat* of the stomach, is of a pale *pink* colour, varying in its hues, according to its full or empty state.

42. That, in health, it is constantly sheathed with a *mucous* coat.

43. That the gastric juice and mucus are *dissimilar* in their *physical* and *chemical* properties.

44. That the appearance of the interior of the stomach, *in disease*, is essentially different from that of its *healthy* state.

45. That the motions of the stomach produce a constant *churning* of its contents, and *admixture* of food and gastric juice.

46. That these motions are in two directions; *transversely* and *longitudinally*.

47. That the *expulsion* of the chyme is assisted by a *transverse band*, *&c.*

48. That *chyle* is formed in the duodenum and small intestines, by the action of *bile* and *pancreatic juice*, on the chyme.

49. That crude *chyle* is a *semi-transparent*, *whey-coloured* fluid.

50. That it is further changed by the action of the *lacteals* and *mesenteric glands*. This is only an *inference* from the other facts. It has not been the subject of experiment.

51. That *no other* fluid produces the same effect on food that gastric juice does; and that it is the *only solvent* of *aliment*."—pp. 275–78.

We have thus given an ample account of Dr. Beaumont's book, or rather such specimens of it, as will put our readers in possession of the most interesting results which it offers. We hope that all who may find it within their reach, will buy and read it for themselves. Since the days of Spallanzani, the experiments of Dr. Beaumont are the most important that have been made on the subject of digestion, and they go fully, we think, to establish the doctrine of digestion by a solvent, secreted by the stomach when stimulated by food.

Art. VII.—Popular Study of Anatomy and Physiology.

A projected school and college book of Anatomy and Physiology, designed for both sexes. By the Editor.

We hope to be pardoned for appropriating a few pages to the publication of a section of the contemplated popular treatise on Anatomy and Physiology, announced in our last number. The object in giving this specimen, is to recall the attention of our readers to that undertaking, and by offering them a portion of it, taken indiscriminately, to enable them to judge of its adaptation to the capacities of those for whom it is designed.

In this attempt to promote the popular study of the branches of science just mentioned, the Editor feels the great importance of securing the approbation of the profession, and he would again respectfully solicit of his readers such remarks on the enterprize, as they may suppose are calculated to be useful. In style and manner the section here introduced, may be considered as a sample of the whole. At what time it will be ready for the press cannot be stated, as it must depend chiefly upon the professional engagements of the Author.

CHAPTER II.

Section 2.

OF THE SPINE.

1. If a person passes his finger down the middle of his back, he feels a row of hard points. They are called spines, or spinous processes, and from them the back bone itself, of which they are a part, has received the name of spine, or spinal column.

2. This column is not a single piece, but consists of 24 separate bones united together. Each piece is called a *vertebra*, from *verto* to turn; and animals that have a spine of this kind, as man, quadrupeds, birds, reptiles, and fishes, are called vertebral or vertebrated animals; while insects, and worms, which have no spines, are called invertebral animals. This is the first great division of the animal kingdom, and shows the connexion between anatomy and natural history.

3. Every vertebra has a body, which is like a piece of cylinder or rod, sawed across, and consequently it has two flat surfaces, fitting it for union with the vertebra above and below it. Behind, it has a bony arch, the ends of which are attached to the body of the bone, and form by its aid an irregular ring; and the succession of these rings, throughout the whole length of the spine, forms a canal or tube for the spinal marrow, as may be seen by the annexed plate, where the rod represents the place of the canal.

4. From the centre of the arch of each vertebra, the spinous process arises, and on each side of it there are three others, one called the lateral or transverse, to assist in attaching the ribs to the spine; the other two named the oblique, and designed to connect the vertebræ with each other.

5. Between the vertebræ there is a considerable mass of cartilage or firm gristle, which is compressible and elastic like cork. It adheres to the surfaces of the bones and serves to connect them; but they are still more firmly knit together by ligaments or strings, which pass from one vertebra to another on every side of the column.

6. The vertebræ are divided into three classes—those of the loins, of the back, and of the neck—called *lumbar*, *dorsal*, and *cervical*. The whole taken together are about one-third of the length of the individual, and those of the back are equal to those of the neck and loins, while these again are nearly equal to each other. Thus, if the person is six feet high, his spine is two feet long, the dorsal portion being twelve inches, the cervical six, and the lumbar six, or a little more. Any considerable departure from these proportions is attended with a corresponding injury to the personal appearance of the individual, a fact which should be known to statuaries and historical painters, and shows the light which anatomy sheds upon the fine arts.

7. The lumbar vertebræ are only five in number, but from their great thickness they make a part of the column rather longer than the seven vertebræ of the neck. The lowest is the largest of the whole spine—the upper is nearly of the same size with the dorsal vertebra which rests upon it. These latter, twelve in number, are intermediate in size between the lumbar and the cervical, the upper one being the smallest of the whole. A separate description of the different vertebræ, from their general likeness to each other, is not necessary, except of the two upper joints of the neck; an account of which cannot, however, be given with clearness till the bones of the head have been described.

8. We have spoken of the spine as composed of 24 bones, but in reality it comprises a greater number, for the bone on which the low-

est lumbar vertebra rests, is, strictly speaking, a part of the spine—the part which connects it with the hip or pelvis.

9. This bone is called the *sacrum*. It is nearly triangular, with the point of the angle downwards, the edges to the sides of the pelvis, and the two flat surfaces directed backwards and forwards. The upper side, corresponding with the base of a triangle, is firmly connected by ligaments with the last lumbar vertebra. From this joint the sacrum turns backwards, and then forwards to its lower end, so as to be convex behind and concave before. The spinal marrow descends into the sacrum, where it terminates in a number of nerves, which go out through holes to the lower extremities. It has the appearance of four or five vertebræ consolidated together, but destitute of the oblique and lateral processes with which the true vertebræ are furnished.

10. The sacrum has a point slightly moveable, an inch or more in length, somewhat resembling the beak of a bird, and called the *coccyx*. In the infant it is composed of four small distinct bones, which in the adult are united into one. The tail bones of animals is the coccyx extended.

11. When viewed in front or rear the spine is observed to be straight, that is, it neither bends to the right nor left, But when looked at in profile, or sideways, as in figure 3, it is seen to be curved. From the bottom of the skull it begins to descend nearly perpondicular, but very soon curves backward till it comes between the broadest part of the shoulder blades, when it gradually advances forward to the middle of the loins, after which it inclines a little backwards to its termination on the sacrum, which curves forward.

12. Thus the neck naturally projects forward from the shoulders, these are a little rounded, and the loins present a hollow. This is the curve line of beauty in the trunk of the body, and shows that a spine which is too straight, is as much at variance with a graceful figure, as one that, within certain limits, is too crooked.

13. If the spine is unnaturally long in proportion to its thickness, the person is weak, but supple in his back. On the other hand, large vertebræ indicate strength, a fact well known to those who deal in horses.

14. Thus, there are natural differences in the strength and flexibility of the spines of different persons; but much of the varety in this respect which we see in society, is referable to our different employments. The farmer in the country, and the porter in the city, who lift and carry heavy weights, have the bones of the spine closely knit together, and exhibit strength without much suppleness; but stage performers, circus riders, and rope dancers, who habitually throw

themselves into a great variety of attitudes, are capable of bending their spines to a degree that often excites astonishment.

15. Among different races of animals this diversity is still greater. Thus, the spine of the horse, with the exception of its cervical portion, has but little motion among its different parts, but posseses great strength, and can carry heavy burthens; while that of the black snake of our woods, or the *boa constrictor* of South America, is so flexible, that the animal is capable of coiling many times round its prey. A difference in the manner in which the vertebræ are united, is the chief cause of these varieties.

16. The uses of the spine require that it should be made up, as we find it, of a number of pieces, separated by cartilage, and bound together with ligaments. These uses are, first, to support the head, the upper extremities, the ribs and the breast bone, with all the soft parts which cover them; secondly, to afford a fixed point for the origin and insertion of the muscles of the trunk of the body, and the upper bones of the extremities; thirdly, to protect the spinal marrow.

17. If the spine had been a solid piece of bone, the various motions of the trunk of the body, which are necessary in our daily employments, could not have been performed; if it had consisted of two or three joints only, the acute bending which would have been required at them, must have injured the spinal marrow by compressing it; and if it had been made of cartilage, or any other flexible substance, its strength would not have been sufficient to sustain the weight of the upper parts of the body.

18. The cartilage or gristle which lies between the vertebræ, is quite as necessary as the great number of those bones; for when we walk, or run, or jump down, or fall on our feet from a height, the cartilages between the vertebræ, in consequence of being elastic, are compressed and pushed out from between them, so that the jar or concussion of the brain and the whole body, is, to a considerable degree, prevented.

19. This important object is still further effected by the manner in which the oblique processes of the different vertebræ are applied to, or rest upon each other. The two lower oblique processes of the different vertebræ, are, in a manner, wedged in between the two upper oblique processes of the vertebra below, so as to admit of a slight motion upwards and downwards, when the individual jumps or falls on his feet.

20. The curvature of the spine contributes to the same important end, as any one may assure himself, by observing the difference in the jar communicated to his hand, by successively striking the end of a straight and a bent rod upon a hard body, taking care to place his hand

upon the upper end. When the individual has been for a long time on his feet, the weight of the upper parts of the body, so compresses the elastic cartilages as to make them thinner than when he first arose, and thus he is taller in the morning than the evening.

21. The spine is liable to become bent out of its proper figure, by a variety of causes. While it is still growing, if the child does not take sufficient exercise, the ligaments and muscles which connect the vertebræ, will be weak and relaxed; and a curvature to the right or left, or rather, in different parts of it, to both sides, may take place. Sitting daily for a long time in one position, whether erect or leaning forward, may produce distortion, and even sleeping constantly on one side may have the same effect. In all of these cases the vertebræ may grow into a different shape from what is natural, and the deformity be irremediable.

22. A more lamentable distortion, however, is the consequence of disease in the bodies of one or more vertebræ. A slow inflammation is followed by softening and decay, to this succeeds absorption, and the bodies disappear, leaving their processes, and the bony arch to which they are attached, uninjured. The bodies of the adjoining vertebræ, above and below, then come together, and adhere; the disease is cured, but an angle is formed, and the projection of the spinous processes constitute the hunchbacks which we every day see in the streets.

23. This is generally a disease of early life, and parents should know, that a recumbent or lying position, which takes off the weight of the upper part of the body from the inflamed vertebræ, is indispensable to the cure, and be ready to co-operate with the physician in his efforts to confine the child to a horizontal posture.

24. A still more serious injury of the spine, is the partial separation or dislocation of two of the vertebræ, generally called a broken back, the consequence of external violence .By this accident the spinal marrow is compressed, and all the parts which are supplied with nerves from below that point lose both feeling and motion. If this dislocation takes place in the upper part of the neck, above where the nerves of respiration or breathing go off from the spinal marrow, speedy death is the inevitable consequence—a fact which should be known to members of the bar, and all others who may be called to inquire into the causes of death from injuries which involve the spine.

25. As age advances the cartilages between the vertebræ are partially absorbed, and get thinner and harder. Their bodies approach each other more closely, and the individual becomes "stoop shouldered." The spine loses much of its suppleness and elasticity,

its motions become limited, and jumping or falling on the lower limbs from a height, imparts a much more dangerous jar to the brain and spinal marrow than in childhood and youth.

26. Even this imperfect account of the structure and uses of the spine must present it as an object of admiration. Its strength and pliancy; the vast variety of motions which it favors; the points which it presents for the origin and insertion of muscles; the strong connexion of one vertebra with another, by means of the oblique processes, cartilages and ligaments; the adaptation of its curves to the movements of the head and limbs; its elasticity; and the perfect protection it affords to the spinal marrow which lies in its canal, and sends out nearly all the nerves of the body, most clearly disclose that it was planned and built up by an architect of infinite wisdom.

MISCELLANEOUS INTELLIGENCE.

ANALECTIC, ANALYTICAL, AND ORIGINAL.

I. Analectic.

Ad Sylvas Nuncius.

1. *Confirmation of Sir Chas. Bell's Opinions on the Functions of the Anterior and Posterior Fasciculi of the Spinal Nerves.*—Our attention has been recently drawn to a very valuable paper of Professor Muller, of Bonn, in a late number of the Annales des Sciences Naturalles. The experiments which he adduces are most satisfactory, and will be no doubt considered conclusive, even in Germany, where the doctrine of the separate functions of the abdominal and dorsal roots of the spinal nerves has not been altogether assented to. Meckel, Rudolphi, Weber, and others have admitted it, only as conjectural; our author himself performed some experiments in 1824, with the view of ascertaining its correctness, but the results were far from being uniform and decisive. Bellingeri, in Italy, was also engaged about that time in similar researches, and the conclusions which he drew were, that the anterior fasciculi presided over the sensibility, and the flexion movements of the trunk and extremities, while the posterior presided over the movements of extention. Even Magendie, to whom the second seat of honor is due, as a physiologist of the nervous system, and along with him Desmoulins, in their Anatomie des Syst. Nerv. have not assigned totally exclusive functions to the two sets of nerves in question. Their own words are—"Sl l'on galvanise l'une aprés l'autre, une racine dorsale, et une racine abdominale, qui ne communique plus avec la moelle, on obtient â la verité des contractions par chaque racine. Mais les contractions par les racines anterieures sont en general plus fortes, et plus completes, que par les racines posterieures. Les racines posterieures pincées, tiraillées, piquées, causent de la douleur, mais une douleur bien moindre, que celle qui result de l'irritation de la partie correspondante de la moelle. Alors aussi les muscles correspondans aux nerfs, dont on irrite une racine, se con-

tractent; mais ses contractions sont encore moindres que dans le cas de l'irritation méme de la moelle. La section d'un faisceau de racines dorsales cause une secousse de tout le membre correspondant. Les resultats sont inverses en operant sur les racines abdominales; leurs figures, leurs pincemens, produisent des contractions plus fortes et convulsives tandis que les signes de douleur sont presque nuls.—L'isolement des deux propriétés dans chacun des ordres de racines *n'est pas donc absolu.*" Muller commenced a new set of experiments on rabbits, in order to determine this most interesting question; but he found that the previous operation of opening the vertebral canal was so difficult, and attended with such excessive pain to the animals, as frequently to induce involuntary twitches of all the muscles even when the nerves were not directly irritated, so that he was precluded from deducing any satisfactory conclusions. Indeed there must always be this strong objection to all trials made on the higher animals; but the happy thought of Muller, to examine the spinal system of the frog, has fully compensated for the uncertainty of these. The vertebral canal of the frog may be opened with very little trouble, and with comparatively trifling pain; the animal is so tenacious of life, that it remains quite lively after the operation, and the peculiar arrangement of the anterior and posterior fasciculi of nerves, further facilitates our investigations, for these continue to be distinct from each other, and easily separable for a considerable distance from their points of origin; the posterior root may therefore be raised on a needle and submitted to experiment, while the anterior one is free from all injury. We shall first mention the effects of simple mechanical, and then those of galvanic irritation on the two sets of nerves.

1. When the posterior root is divided the animal appears to experience "quelque douleur;" if the distal, or unattached portion be now seized and irritated, there is not the slightest trace of movement in any of the muscles of the trunk, or of the extremities. When the anterior, or abdominal root is simply touched, convulsive movements of the extremities immediately follow. The same phenomenon, only more violent, are observed when this root is cut and irritated.

2. The galvanic experiments were performed at first with a single pair of zinc and copper plates. Upon applying the two plates to cut ends of the anterior roots, the muscles became convulsed; but no such effect was ever produced when they were applied to the posterior roots. This latter position contradicts therefore the assertion of Magendie and Desmoulins; but we must remember that their experiments were performed on mammiferous animals; and in these the two sets of roots are too short to enable us to separate them satisfactorily from each other, and thus to avoid the irritation of one set, while we are experimenting upon the other. Even in the case of the frog, it is necessary, for the sake of accuracy, to isolate the one from the other by means of the small glass plates; because the galvanic irritation of the motor nerves is found to take place at the distance of half a line. But in order to insure perfect accuracy, it is better to employ a small voltaic pile; for then we may either apply both poles to the cut end of the nerve, or we

may apply one there, and the other to some of the muscles. The following are the results of Muller's experiments in this way.

1. When the two poles are applied to the posterior roots, no convulsive movements follow. 2. When one pole is applied to the posterior nerve, and the other to some muscle at a distance, slight movements of the muscles which are situated in the tract of the galvanic current are observed. 3. When the anterior root is made the subject of these experiments, convulsive movements immediately occur, whether both poles are applied to the nerve, or only one, the other being applied to a muscle; and these movements take place not only in the muscles which are situated in the tract of the current, but throughout the whole extremity. 4 The same result, viz. the occurrence of convulsions, is obtained when one pole is applied to the posterior, and the other to the anterior root. We may therefore safely draw the conclusions, that the posterior roots of the spinal nerves never directly and of themselves provoke muscular contraction; that when they seem to do so (as in the 2d result) it is only from their acting as conductors, just in the same way as any other moist animal substance, of the galvanic current; and lastly that the anterior nerves not only are conductors of the galvanic current, but also are excited thereby to induce muscular movements in the direction of their branches. Now one of these anterior nerves may be deprived of its "vis motoria," and yet retain its conducting power:—to exhibit this, we need only seize and compress it firmly at a little distance from the cut end; and we shall find that no irritation, either mechanical or galvanic, applied between the point of compression and this end will induce any contractions, but if one of the galvanic poles be applied to the end and another to a distant muscle to which the nerve is distributed, then contractions will immediately follow, just as if there was no intermediate pressure; shewing thereby most distinctly that the nerve retains its conducting power.

It has been supposed that galvanism acts as a special and peculiar irritant to the nerves, and in a manner altogether different from mere mechanical injury; but this is not true, for any foreign body, even not metallic, such for example as a quill, when applied to a motor nerve, will provoke muscular contractions. Muller, from multiplied observation, has been led to conclude,—1, that galvanism acts upon the nerves like any other extraneous agent—2, that it is not the proximate cause of muscular contraction; but only that it irritates the nerves, and provokes their "vis motoria," which is altogether different from a galvanic power—3, that it has been proved that nerves are better conductors of galvanism than other moist animal substances—4, that galvanism excites movements, only when a muscle or a motor nerve are situated in the tract of its current—5, that there are some nerves which have no moving power, and can never of themselves induce any movements; that these are only passive conductors of galvanism—6, that there are other nerves which induce muscular movements, not only on the application of galvanism, but also of any mechanical irritant—7, that the dorsal or posterior roots of the spinal nerves have no "vis motoria," but that the anterior have, and that, from these last, all the motor fibres

of the conjoined spinal nerves are derived. He once more alludes to the fallacy of believing that the posterior are ever motor nerves, merely because, when one pole is applied to them and the other to a muscle, certain movements take place.

The next object of his investigation, was to ascertain what effects are produced by irritation of the proximal, or attached ends of the divided anterior and posterior roots. He found that, when a mechanical agent, or when both poles of a galvanic apparatus, were applied to any of these, no muscular movements were ever induced; but that, when one pole was applied to the portions of the roots adhering to the extreme parts (cauda equina?) of the spinal marrow, and the other to some anterior part of the body, as, for example, the head, the muscles of the trunk and extremities were thrown into convulsions. In one experiment, he divided all the anterior and posterior roots as high as the cervical portion of the marrow, and then gently lifted out the spinal cord from its canal, and laid it upon a small glass plate; upon applying both poles to its sacral extremity, there were movements in all the parts which had been left connected with the marrow, viz. the neck and anterior extremities. If this position be confirmed, it would show that the spinal cord is not to be considered as only the "ensemble" o, the nerves which issue from it; for we have seen that the portions of the roots which may be left adhering to the extreme parts of the marf row, do not, upon any irritation, induce muscular movements, but tha- the marrow itself, if irritated, does. t

A few cursory remarks on some of the cerebral nerves are appended to the preceding valuable memoir. Muller agrees with Mayo and others, that the portio dura is not solely and exclusively a motor nerve; when irritated, the animal seems to experience pain. The infra-orbital nerve is one of mere sensation—it has no "vis motoria." With regard to the nerves of the tongue, Muller is led, by his experiments, to state that the lingual, or ninth cerebral nerve, when irritated, or galvanised, provokes violent convulsions of the member; that the gustatory, or third division of trigeminus, excites none of these phenomena, either by mechanical or galvanic agency, except, indeed, when one pole is applied to the nerve and another to the tongue; but, as we have explained before, this sign is quite fallacious, the nerve serving only as a conductor. The glossopharyngeal nerve, on the application of both poles, excites convulsions in the pharynx. These experiments accord with those of Desmoulins and Magendie.

When the lingual nerve was cut, the animal (a cat) seemed to suffer pain; and hence Muller believes that this nerve, although chiefly a motor, is also, in some degree, a sensitive nerve, in the same manner as he supposes the portio dura and par vagum to be. But his experiments here appear to us far from satisfactory.—*Medico-Chirurgical Review, January*, 1834.—*From Annales des Sciences Naturelles.—From Balt. Med. & Surg. Journal & Review.*

2. *The Anatomy and Physiology of the Liver, by* FRANCES KIERNAN, Esq. M. R. C. S.—After giving a short account of the descriptions

of Malpighi and other writers respecting the minute structure of the liver, the author proceeds to state the results of his own investigations on this subject. The hepatic veins, together with the lobules which surround them, resemble in their arrangement the branches and leaves of a tree; the substance of the lobules being disposed around the minute branches of the veins like the parenchyma of a leaf around its fibres. The hepatic veins may be divided into two classes; namely, those contained in the lobules, and those contained in canals formed by the lobules. The first class is composed of interlobular branches, one of which occupies the centre of each lobule, and receives the blood from a plexus formed in the lobule by the portal vein; and the second class of the hepatic veins is composed of all those vessels contained in canals formed by the lobules, and including numerous small branches, as well as the large trunks terminating in the inferior cava. The external surface of every lobule is covered by an expansion of Glisson's capsule, by which it is connected to, as well as separated from, the contiguous lobules, and in which branches of the hepatic duct, portal veins, and hepatic artery, ramify. The ultimate branches of the hepatic artery terminate in the branches of the portal vein, where the blood they respectively contain is mixed together, and from which mixed blood the bile is secreted by the lobules, and conveyed away by the hepatic ducts which accompany the portal veins in their principal ramifications. The remaining blood is returned to the heart by the hepatic veins, the beginnings of which occupy the centre of each lobule, and when collected into trunks pour their contents into the inferior cava. Hence the blood which has circulated through the liver, and has thereby lost its arterial character, is, in common with that which is returning from the other abdominal viscera, poured into the vena portæ, and contributes its share in furnishing materials for the biliary secretion. The paper is accompanied by numerous drawings of preparations made by the author, of the minute structure of the liver, in which the different sets of vessels and ducts were injected in various ways.—*London Medical Gazette, Jan.* 1834.—*Balt. Med. and Surg. Journal and Review.*

3. *On the efficacy of the Secale Cornutum in Leucorrhœa.* By G. Negri, M. D.—On the employment of the secale cornutum, and on its efficacy on leucorhœa we shall limit ourselves to some general remarks, which are the result of our experience on this subject, without entering into any detail of the singular cases which occurred under our observation.

Although the secale cornutum will be found one of the most valuable remedies in the simple form of leucorrhœa, even of a very long standing, and which have resisted many other means, still its efficacy in this kind of diseases is not so rapid as in hæmorrhages. This would have been almost expected as a matter of course, from the more chronic character of the former complaint. Therefore we found it more, convenient, and we may even say more safe, to give it in small doses as five or six grains two or three times a day, rather than in larger and

more frequently repeated ones. Thus the remedy may be continued for a long period without any inconvenience, and with regular advantage. In leucorrhœa as in menorhagia, we must remember, that the ergot of rye has also a peculiar power over the fibrous texture of the womb, and that pains and spasmodic contractions of this organ may be induced, and then symptoms of metritis, and even an increased discharge, may eventually take place. Then it is of the utmost importance, in leucorrhœa also, to allay any state of inflammation, or of local irritation, by those therapeutical means, which may be required by the particular symptoms of each case, before we have recourse to the secale cornutum.

We find in practising, that some patients could not take at first any dose of this remedy without severe pains being induced in the uterine system, when, after having used other remedies for a certain time, they could take the secale again without the least inconvenience, but, on the contrary, with a decided and progressive advantage on their general state of health.

In one of these patients the os uteri was partially open and indurated, and very tender on the left side of its margin: when the finger pressed over this point, acute pains were excited, darting from that part to the right iliac region. We used in this case the extract of conium with the sulphate of iron, with great benefit, and after this morbid sensibility was subdued, we gave again the secale cornutum for the remaining leucorrhœa with decided benefit, and without any more inconvenience, although continued for a long time. We have lately seen this patient, and her general state of health has wonderfully improved; she feels a great deal stronger, and the white discharge is almost entirely gone; we confidently expect to see her in a short time cured by the ergot of rye, which now she only takes twice a day.

Out of ten cases of leucorrhœa, of which we kept regular notes, the ergot of rye has failed in three. But, in all probability, that happened more from want of experience in the judicious employment of the remedy rather than from its inefficacy.

Of these three unsuccessful cases, two were cured afterwards by other remedies; but one had never been permanently well, either by the ergot of rye or by any other means employed for a long time, both by ourselves and several other practitioners. In this singular case, the secale cornutum appeared to have induced once menorrhagia, after which the patient was better from the white discharge for a little while. Amongst the other things we tried repeatedly the injection of nitrate of silver, as recommended by Dr. Jewel, but with out any good effect, and as it appeared to this gentleman very extraordinary, we recommended her to the doctor himself, but we do not know the result.

The secale cornutum has been successfully employed in leucorrhœa by our colleagues at the St. John's Dispensary, and our friend Dr. Ryan has even used it in private practice with the greatest advantage.

On the effects of the Secale Cornutum in Gonorrhœa.—About the modus operandi of the secale cornutum in the above classes of diseases,

Dr. Spajrani expressed his opinion in the following way, leaving however this subject for subsequent inquiries. "I am," says he, "rather inclined to believe, that this remedy does not act either as an astringent, or as a stimulant, but more as a sedative on the capillary vessels, and for this reason it may be conveniently used in *certain* instances of active hæmorrhage and of vascular congestion, where exists a state *approaching very much to inflammation;* but yet *it is not to be used* in instances where some *acute inflammation is present,* for which stronger means must be employed."

With the view of ascertaining these therapeutical principles, and from the advantage already obtained by the ergot of rye in leucorrhœa, we thought we should not incur any great risk by trying it also in gonorrhœa, at first in females, and then, if not injurious, in males. It is true that the preternatural secretion of the mucous membrane of the genital organs in gonorrhœa, is induced by a specific virus, but still we readily believe that its essential pathological character is inflammatory. Therefore no better opportunity could be obtained for ascertaining the supposed modus operandi of the secale cornutum, than to use it in a disease of acknowledged character, and in which we could actually see the effects which might be induced by it.

The following cases will give an idea of the result of our inquiries on this subject.

Case I.—Mary C., married, admitted to St. John's Dispensary on the 9th of May, 1833. She has been ill with gonorrhœa for about three weeks; she caught the disease from her husband, and had been under our care some months ago for a similar complaint, induced by the same cause. She complains of shooting pains through her womb and loins, with ardor urinæ. She has been regular three weeks ago, and has never been subject to leucorrhœa. An opening medicine was ordered, and she was directed to take afterwards six grains of the secale three times a day.

May 13th. She is a great deal better; has now no discharge; had no giddiness, but only pains in the lower part of the abdomen, and a kind of cramp of the womb; feels still pain in making water. The same powders to be taken only night and morning.

20th. No discharge; complains still of shooting pains in the womb; secale suspended, and only supertartrate of potash to be taken as an imperial drink. On the 29th she was taken unwell, but the catamenial discharge was very scanty and pale, after which, on the 6th of June, had a slight return of the discharge, which was gradually arrested by the secale in moderate doses. She was discharged cured on the 25th of July.

Case II.—Mary Anne C., æt.; 26, single, admitted on the 9th of May, 1833.

Has had gonorrhœa for nearly two months; has not been regular for several months, and has been subject to leucorrhœa; bowels regular. Six grains of the ergot of rye were ordered to be taken every four hours.

13th. The discharge ceased after having taken four or five powders.

and has not returned since: proved no inconvenience by taking her powders. They were ordered to be taken only night and morning.

30th. She menstruated on the previous day, and was left without medicine.

June 6th. Has no discharge at all, and says she is quite well.—Discharged cured.

Case III.—Harriet R., æt. 27, married, admitted on the 20th of May, 1833.

Has had gonorrhœa four years ago, from which she was perfectly cured. She was taken ill again with the same complaint, caught from her husband about ten weeks ago, for which she has been treated, as an out patient at St. Bartholomew's Hospital, under Mr. Lawrence. Balsamic medicines and mercurial pills were given to her, from which she was much relieved. Now the discharge is thin and white, when before it was yellow and thick. Complains still of some starting pains through the womb, but has less pain in making water; complains of pain in her right leg, where there is inflammation of the periosteum on the shin bone, probably of a syphilitic character; her bowels being costive, a cathartic powder was ordered, and five grains of the secale cornutum, to be taken every four hours, beginning the following morning.

23d. The discharge is less; she feels sick, after having taken her powder, and complains of being very weak.—Pergat.

30th. The discharge is less than the preceding day of attendance; she has now no pain in making water, but continues to feel sick after taking the powder; has had no giddiness. Continue the powder three times a day.

June 6th. The discharge has ceased. The secale was suspended, and the mercurial treatment was adopted for what we thought a syphilitic complaint.

Case IV.—John F., æt. 40, a baker, admitted on the 21st of June, 1833.

Has had gonorrhœa about six times; it usually resisted every remedy, and once he had it for nine months; now he has had gonorrhœa for about three weeks; has great pain and scalding in making water, and generally some drops of blood follow; has a great deal of discharge, and the orifice of the urethra is reddened and swollen; in the night he has painful erections. Five grains of the secale cornutum to be taken every four hours.

22d. We saw again the patient. He has taken five powders; the discharge is not abated, but he thinks he has less pain in making water.—Pergat.

28th. He has taken about sixteen powders; he has no pain in making water; he has had still painful erection at night, but the orifice of the urethra is a great deal less red, and the discharge is considerably abated; he has now no inconvenience, except a very slight feeling of warmth in making water. He continued the medicine in ten grain doses in every four hours, until the 11th of July, when he was nearly well, and requested to be discharged.

The patient was under Dr. Ryan's care, and was repeatedly seen by ourselves and colleagues.

Case V.—William M., æt. 24, admitted on the 22d of August, 1833. Has had gonorrhœa about twelve months ago; has now been ill, for the second time, with the same complaint for a fortnight; discharge copious, yellow and thick. Five grains of the secale cornutum to be taken every three hours.

26th. Is just the same but does not feel worse.—Pergat.

September 2d. He is a great deal better.—Pergat.

12th. Discharge scarcely perceptible. Continue the powders, but only one, three times a day.

16th. Discharge almost gone.—Pergat.

He went on taking his powders till the 10th of October, when he asked for another dose of them, to be taken night and morning, having still some little discharge only in the morning. This patient who was very attentive, and appeared much satisfied with his powders, having not returned, we have good reason to believe he is now doing well.

Case VI.—Wm. S., æt. 28, admitted on the 4th of September, 1833. Was taken ill with gonorrhœa a week ago; feels great pain in making water; discharge copious, yellow and thick.

℞. Pulv. secalis cornuti gr. v. 3a. q. h. s.

16th. Discharge thinner; pain in making water gone.—Pergat.

23d. Discharge increased; secale suspended, and prescribed the mistura balsamica.

October 7th. Discharged cured.

Case VII.—Only a few days ago we had in private practice a patient affected with gonorrhœa for the first time. The symptoms were not severe; the discharge moderate. Being an individual of a delicate constitution, and of very regular habit, we expected to do some good in this case with secale cornutum. Three grains of Battley's extract were ordered to be taken every three hours. The following day the discharges appeared a great deal less, and the remedy was continued. Two days afterwards the discharge increased, as well as the ardor urinæ, and he had painful nocturnal erections. The remedy was brought to five grains every three hours, but was soon afterwards suspended, and other means adopted. In this case the secale cornutum certainly increased the severity of the symptoms; and the discharge which was moderate at first, and thin, became afterwards, copious, thick, and sometimes tinged with blood. The pulse was also feverish and sharp, the skin warmer than naturally. This patient is usually of a costive habit, but has a great aversion to take purgatives, had we used them previously, or simultaneously with the secale, we could perhaps have obtained a better result. This was necessarily done after we had resorted to the other usual means generally employed for that complaint.

Short Notes of Cases by Dr. Ryan.

Case VIII.—"M. M., æt. 22, married, has contracted gonorrhœa from her husband; became a patient under my care at St. John's Dis-

pensary, Sept. 12, 1833. Is two months ill. She was ordered 3 iss of secale, in twelve powders, one to be taken three times a day.

"16th. Discharge nearly gone. To continue.

"23d. Discharge has entirely ceased."

Case IX.—"Charles C., æt. 22, has suffered from gleet for six months. Commenced the secale Sept. 17th, 1833, and on the 23d was nearly well. He has taken a variety of medicines, but nothing stopped the discharge so rapidly as the powders."

Case X.—"G. S. æt 34, has been six months affected with gleet.—Commenced the secale Oct. 30th, 1833. Took fourteen powders, without any benefit. This was a morning patient, and had the medicine of a druggist, which, perhaps, was bad."

Case XI.—"A. B., æt. 34, has suffered from gleet for eight months. He was cured by twelve doses of the secale cornutum."

Case XII.—"J. A. L., æt. 19, applied to me Nov. 5th, 1833. Has gonorrhœa for the first time; symptoms severe. Ordered the secale.

"8th. Discharge more copious, ardor urinæ severe.—Secale omitted.

"Ordered carbonate of soda in barley water or linseed tea.

"In this case I did not expect much benefit from the secale, but was resolved to try it. Every medical practitioner is aware, that a first gonorrhœa is much more severe and indomitable than when the patient has had the disease frequently, or when the acute symptoms have ceased. But as I have known cubebs repeatedly arrest gonorrhœa in the acute stage, I saw no objection to employ the secale cornutum."

From the above facts it appears to us quite evident, that the secale cornutum has a peculiar action on the mucous membranes; but if exhibited when there is a state of acute inflammation, their morbid secretion may be considerably increased. On the contrary, when a more chronic form of inflammation exists, the secale cornutum may have a beneficial influence in arresting their preternatural discharge.

These deductions being in perfect accordance with what has been already remarked on the efficacy of ergot of rye in hemorrhages and leucorrhœa, we think Dr. Spajrani's assertions on this point pretty correct. If any sedative or anti stimulant property on the capillary vessels of the mucous membrane may be ascribed to the secale cornutum, as Dr. Spajrani is inclined to believe, we do not know. It is true, that in case IV. of gonorrhœa, where did exist redness and swelling round the orifice of the urethra, this appearance subsided under the influence of the secale; and that, in some instances of hemorrhage, the patients were complaining of a general prostration and faintness; but others, on the contrary, felt stronger, and their pulse appeared to us more excited; when, in cases VII. and XII. of gonorrhœa, the inflammatory symptoms were considerably increased. Are some of the former symptoms to be ascribed to the narcotic influence on the nervous system, rather than to any real sedative property of this remedy? We are inclined to believe so. We were much pleased in finding out that MM. Trousseau and Maisonneuve are of the same opinion on this point. (See *Lancet, March 30th*, 1833.

Now, to give a more satisfactory idea of our results on the employment of the secale cornutum in hemorrhage and leucorrhœa, we put down all the different instances of both in the following

Tabular Form indicating the result of all the Cases of Hemorrhages and Leucorrhœa which came under our observation, from the 16th of April, 1832, to the 4th of November, 1833, and were treated with the Secale Cornutum:

Different Forms of the Disease.	Total number of Cases.	Successful Cases.	Unsuccessful Cases.	Remarks.
Menorrhagia.	12	8	4	
Hemorrhage from the rectum.	2	2	—	*We include in the whole number the cases treated by Doctor Macmichael, at the Middlesex Hospital.
Hæmatemesis.	4*	3	1†	† We put down as an unsuccessful case the first attack of the disease of Elizabeth Pilcher [case VI.] although in the second, the secale turned out very beneficial when given in proper doses.
Epistaxis.	1	1	—	
Hæmoptoe.	1	1	—	
Leucorrhœa.	10	7	3	
Total.	30	22	8	

Note.—We did not put down in this table the cases of gonorrhœa because they were related merely to show the effects, and not the efficacy, of the secale cornutum on that disease. All we can say, from the limited number of observations on this subject, is, that perhaps the ergot of rye may be found of some service in the more chronic form of that disease.

Of the unsuccessful cases of menorrhagia, the first was a woman who had a copious loss of blood from the vagina, with great tenderness at the lower part of the abdomen, and pains round the groins and loins. Her pulse was such as would have induced us to bleed her, had we not wished to try the secale cornutum in this case, which was the second that had come under our observation, since we began to employ this remedy. Five grains of the secale were ordered to be taken three times a day. The powders were taken for two days, and the pains and loss of blood were considerably increased. They were suspended; she was bled from the arm, and astringent medicines were ordered, which cured her very soon. This unfavorable result led us to adopt another method of practice in the following case (the second related to the society,) which succeeded very well, viz: to bleed first, then to give the secale.

The second was a stout woman who at her regular period was taken ill, but the bloody discharge was very profuse, and went on more or less for nine weeks. Had great pain at the lower part of the abdomen, and round her loins. Her pulse appeared weak. Five grains of the

secale were ordered to be taken every second hour. Three days afterwards she was not better, and felt an increase of the pains after taking her powders. Her pulse was stronger. She stated having had a miscarriage about three months ago. She was bled, and directed to take the secale only three times a day, from which she felt worse, and was then suspended, and other means adopted.

The third case was that of Sarah Jones, æt. 33, married, admitted September 2nd, 1833.

Has had five children and miscarried twice, the second time five weeks ago, when she lost a great deal of blood. Three weeks afterwards, finding herself better, started for some place in the country, and came home to London, a distance of eighty miles. She was taken ill again on her journey, and lost a great deal of blood. She continued so more or less till August 31st. On the first of September the hemorrhage became very violent, and she came to our dispensary the following day, and was under our care. She does not complain of any great pains but in her left iliac region and loins; her complexion is very pale, and there is a great action of the heart and arteries, but her pulse is certainly weak and empty; her head feels heavy; her bowels are costive.

℞. Pulv. secalis cornuti, ʒ iij;
Divide in pulv. xxiv;
Pulv. i. ʒa, q. h. sumend.;

viz. about vij. grains every three hours. A mixture with a drachm of carbonate of magnesia and two scruples of rhubard in six ounces of water, was also given, a wineglassful of which to be taken every night, or night and morning, if her bowels were not open.

September 5th. She was sick, and vomited twice after taking the first powders but felt only a sense of sickness afterwards at each time she took her powders. Had some giddiness, but the pains in her loins and side were relieved. The bloody discharge is reduced very much, and she states that it was so soon after having taken a few powders. Bowels regularly open. Soon after having taken a powder she feels "*a general sense of weakness all over, from the head to the tips of the fingers and toes, as she could not stand; then she feels sick.*" Action of the heart and arteries less violent. Pulse more natural and soft. The mixture to be continued, and the powders to be taken only every five hours.

September 12th. She is better; discharge a great deal diminished, and less colored. The powders continued to make her sick and weak. Continue with the powders.

16th. Feels very sick with her powders. Discharge a great deal increased; but she thinks *her time to be unwell is very near.* The secale was discontinued, and she was gradually doing well under the use of the following pills:

℞. Ferri sulphatis, gr. i;
Extract. rhei, gr. iij;
M. f. pil. ter die sumend.

These pills were continued till the 7th of October, when she was dis-

charged cured. Under these remedies the palpitation of the heart, and the excessive arterial action were reduced to their natural standard, and the patient got very soon better from that sense of general prostration, of which she so much complained before.

Although we put down this with the *unsuccessful cases*, still we thought that properly speaking, it should not have been considered entirely so, for the hæmorrhage increased in consequence of her having taken the secale when near menstruation. This was the reason which induced us to say in another place, that "only in two or *three* cases of menorrhagia, the loss of blood, &c. were remarkably increased by the action of the remedy."

The fourth unsuccessful case of menorrhagia is that of Mary Ann May, æt. 22, married, admitted the 4th of November, 1833. She had miscarried a short time ago, and was laboring under profuse menorrhagia for several days; was complaining of pains in the lower part of the abdomen and loins. She is a thin and delicate looking woman; her pulse appeared to us rather weak. Five grains of the secale cornutum were ordered to be taken every two or three hours.

Nov. 7th. She has been a great deal worse. The hæmorrhage increased very much, with spasmodic pains in the hypogastric region, and had giddiness, and pains along her thighs and legs. She took only six powders, and as soon as she left them off, the pains decreased.—Her pulse was quick, and sharp, but empty. Her bowels are rather costive. The following mixture was ordered:

℞. Magnesiæ sulphatis ʒ j;
Antimonii tartarisati, gr. ij;
Aquæ fortis, ʒ viij;
M. Cyath. parvul. i. bis terve die sumend.

21st. After the first glass of her medicine, she vomited several times, after which the hæmorrhage suddenly ceased, and she felt a great deal better; this was the reason she did not attend regularly. Now the hæmorrhage returns a little if she has to exert herself too much. The secale cornutum was ordered again to be taken only two or three times a day.

25th. The hæmorrhage *entirely ceased* last Thursday evening (Nov. 21st) after having taking one of her powders which she continued taking till to-day. She felt some pain in the lower part of the abdomen, but a great deal less than at the time she took them.*

In using the secale cornutum we preferred to give it in powder, as Doctor Spajrani did, being also the most economical and convenient way in dispensary practice.

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* This case, which came under our observation some time after we had written the first part of this paper, was not there mentioned.—We have put it then amongst the unsuccessful cases, although it was only from our injudicious employment, and not from inefficacy of the remedy, that the hæmorrhage had not been arrested at first.

Tabular Epitome of all the Cases of Hæmorrhage and Leucorrhœa which came to our knowledge, since Dr. Spajrani's publication, cured by the Secale Cornutum by different Practitioners in Italy, France, and England.

Where, and by whom treated.	Total number of cases.	Different kind of Hæmorrhages. From the Womb.	From the Nose.	From the Chest.	From the Bladder.	From the Stomach.	From the Rectum	From the Gums.	Leucorrhœa.	Where published or recorded
In Italy.										
Dr. Spajrani	17	8	2	5		—	—	—	not† sta'd	Omedei's Annali di Medicina e Chirurgia for Mar. 1830. Lancet, Feb. 5, 1831.
Dr. Pignacca	4	2	—	2	—	—	—	—	—	Do. Number for May and June, 1830: Lancet, do.
Dr. Gabini	7	3	2	1	—	1	—	—	—	Do. Number for Feb. and March, 1831.
Dr. Bazzoni	8	—	—	—	—	—	—	—	8	Do. do.
In France.										
M. Trousseaux et Maisoneuve	13	13	—	—	—	—	—	—	—	Bulletin General de Therapeutique. Lancet, March 30, 1833.
England.										
Dr. M. Hall	1	—	—	—	—	—	—	—	not sta'd	London Medical and Physical Journal for March, 1829.
Dr. Lanyon	1	—	—	1	—	—	—	—	—	Lancet, for March 13, 1833.
Mr. Bright	1	1	—	—	—	—	—	—	—	Do. for April 13, 1833.
Mr H A O'Shea	not‡ sta'd									Do. do.
DrMacmichael	1	—	—	—	—	1	—	—	—	Dr. Negri's Paper. (See Case vii.
Dr. Negri	21	8	1	1	—	2	2	—	7	Do.
MrENettlefold	2	—	—	2	—	—	—	—	—	Do. Case xii. xiii.
Dr. Ryan	2	1	—	—	—	—	—	1	not sta'd	Do. Case xiv. xv.
Totals	76	37	5	12	2	4	2	1	5	

† We mean those who have used it successfully in this disease, but the number was not stated.

‡ Employed the Secale in Hæmorrhages for the last two years "with invariable success."

We seldom ordered it in more than five or six grain doses, more or less frequently repeated according to the violence of the case, or the peculiarity of the concomitant symptoms. We *purposely avoided* giving the secale intermixt with other medicine; but we were obliged sometimes to modify by other means the morbid condition of those parts or organs over which our remedy had to exert its powerful action; when at other times it was necessary to get clear of these irritating causes, which would have counteracted its beneficial influence—as, for example, the employment of purgatives when the bowels were costive. This, however, can never be an objection to our practice, as

that *must* be always the case with the administration of any other remedies, which are given with a peculiar object. Although the criterion of the *post hoc, ergo propter hoc*, be not always correct, still we believe that in our profession, when violent symptoms are present, and we employ remedies of acknowledged activity, with the view of curing them, if we obtain a favorable and constant result for a sufficient number of times, we may begin to believe that criterion sufficiently correct. The weight of such a conclusion is moreover increased by the uniformity of results obtained by different individuals, and in different countries, therefore the following prospective view of the general results of the secale cornutum in hæmorrhages and leucorrhœa, will make a striking impression of the real efficacy of that remedy against those classes of diseases.—*London Med. and Sur. Journal—From Balt. Medical and Surgical Journal and Review.*

4. *Herpes.*—In a case of herpes in a female, at present in the Westminster Hospital, Mr. Guthrie has employed the acetate of copper, as an external application, with very decided success. This ointment was originally employed by an old women, who, about thirty years ago, undertook to cure some very severe cases of herpes at that time in the hospital. Her treatment was completely successful, but she refused to divulge the nature of the ointment. It was, however, analyzed, and found to be composed of acetate of copper. Ever since that period the acetate of copper has been applied in like cases with uniform success.—*London Med. and Sur. Jour.—Balt. Med. and Surg. Jour.*

5. *Fresh Prepared Carbonate of Iron.*—Doctor Büchner and Dr. Richter both attest the efficacy of this mineral salt, even in cases of neuralgia, where common, not recently prepared, carbonate of iron had failed. The mode of administering the remedy is as follows—twelve grains of crystalized sulphate of iron are to be mixed with six grains of dried carbonate of soda, and dissolved in half a cupful of water, slightly sweetened with sugar: this dose to be taken three times a day. It is equivalent to five grains of carbonate of iron, and operates as an anti-neuralgic medicine, much more powerfully than larger quantities of the carbonate of iron as sold in the shops.—*Dublin Journal, Jan.* 1834.—*Balt. Med. and Sur. Jour.*

6. *Ranque's Remedy for Swollen Breasts.*—Every thing which can add to our knowledge concerning the best means to be adopted in cases where the mammary glands become swollen, painful and indurated, in consequence of the child being taken from the breast, and the discharge of the milk by the natural outlet ceasing, must be thankfully received. Doctor Schnur has made an interesting communication on this subject. He was struck by some observations made by Ranque, (Floriep's Notizen,) and determined to try the remedy he recommended.

The swelling of the breast which precedes the formation of mammary abscess, is caused in the first instance by the retention of the

milk and the consequent distention of the lactiferous ducts. But this is not the only cause of the local derangement that so speedily follows, for the vascular system of the mammæ is wonderfully increased preparatory to and during lactation, and, therefore, when this augmented circulation of the breasts is baffled in the performance of its proper function, the secretion of milk, it often tends to form with great rapidity vicarious and unhealthy products. Hence arises the obstinacy of many such cases, and hence they are frequently not found to be amenable to the common methods of treating local congestions or inflammations. All practical men are consequently obliged to adopt various methods of treatment, and the skillful accoucheur is often enabled by attention and pains to save his patient from the suffering accompanying such affections. Ranque, impressed with certain theoretical ideas which is unnecessary here to discuss, was led to the use of the following liniment:—

℞. Extracti Belladonnæ ℈ ii.
Aquæ Laurocerasi ʒ ii.
Ætheris Sulphurici ʒ i.
Ft. Linimentum.

This must be well shaken before it is used. It is to be rubbed into the breasts as high as the axillæ, morning and evening, and the breast must be then covered with fine flannel soaked in the liniment. This proceeding must be repeated every day, until the swelling disappears, which is usually on the second or third day. The æther has a smell which to some is very disagreeable, but they ought to bear this inconvenience if possible, for it adds essentially to the efficacy of the remedy.—*Dublin Jour. Jan.* 1834.—*Balt. Med. and Sur. Jour.*

7. *Facial Hemiplegia—External use of Phosphorus.*—The symptoms of this local palsy are well known; the mouth is drawn to the sound side, the eye is half-closed and weeping; the point of the nose is sometimes distorted, and the patient is often utterly incapable of moving the forehead, eyelids, and nostrils of the affected side; the motion of the eyeball, however, remains perfect; and the saliva usually flows more profusely than in health; but part of the food, especially if it be liquid, is apt to escape from one corner of the mouth. The temperature of the palsied parts is often lower than that of the other half of the face. The general health may be quite unimpaired. This hemiprosopoplegia may happen at any period of life; but in childhood it is very rare. The following treatment was successful in three cases.

℞. Phosphori, gr. vj.
Olei animalis æther, ʒ iij. M.

The palsied parts are to be rubbed with this embrocation three or four times daily. After it has been used for a day or two, several places become sore, and then form scabs or crusts, which gradually dry and fall off. The rubbing must be renewed a second time, when the skin recovers its soundness; and in severe cases the operation requires a third repetition. Generally after the first desication, the parts are found to have regained a slight power of motion, which in-

creases more and more after the second and third rubbings. The use of the liniment causes very considerable pain, and a feeling of burning; but no evil effect has ever resulted from it.—*Hufeland's Jour.—Medico-Chirurgical Review, Jan.* 1834.—*Balt. Med. and Sur. Jour.*

8. *Radical cure of Varicocele.*—In a memoir recently read by M. Breschet before the *Academie des Sciences*, a new and effectual method is proposed for the radical cure of cirsocele and varicocele. M. Breschet had, for a length of time, reflected upon the practicability of accomplishing this object by effecting the complete obliteration of the varicose veins, and an opportunity presenting, he resolved to put it to the test. With this view he had constructed small steel forceps, so light as not to incommode by their weight, and arranged in such a manner as to admit of the pressure being regulated by a screw. To obviate any material injury of the skin, the bite of the instrument was made somewhat broad and flat, and was besides carefully padded. In the application of these forceps, the skin was pinced up with the varicose veins, while the vas deferens was left in the posterior part of the cord. One pair of forceps was then applied to the fold of the skin, and the varicose veins thus pinched up, as near to the abdominal ring as possible, and was fixed there by turning the screw, so as to make sufficient pressure to prevent the flow of blood through the veins. A second was afterwards applied, in the same manner, in the immediate vicinity of the testicle. To secure the equable operation of the constriction, meshes of charpie were interposed between the blades of the instrument and the skin. In one case in which this practice was pursued, the individual complained towards evening of a slight sense of heat in the part, and pain extending upwards to the lumbar region. He was put upon rigid diet, and was directed to keep the part constantly wet with a solution of the acetate of lead. These applications allayed the pain, and the next day it was so much reduced as to be supportable. The part of the tumor situated between the two forceps was somewhat red, hot and tumefied, but the portion included in the bite of the instrument was not more painful than other points.

At the expiration of forty-eight hours, sufficient inflammation having been excited to effect the adhesion and obliteration of the veins, the instruments were removed, and the inflammation of the parts was treated by resolvents. The compression exercised upon the skin gave rise to a small eschar, followed by a superficial ulcer, which healed in about eight days. The varicose tumor, which was at first red and tumid, gradually wasted away, and at the expiration of a fortnight, was reduced to the size of a small nut, and when pinched between the fingers, none of the venous cords could be distinguished, but the whole seemed to be converted into a simple homogeneous mass. A complete cure was accomplished in this case in about twenty days, at the expiration of which time the diseased cord was not larger than that of the opposite side. M. Breschet also reports another case, which was successfully treated by the same procedure.—*Gazette Medicale, Jan,* 1834—*Balt. Med. and Sur. Jour.*

9. *Case of Hypertrophy of the Muscular Coat of the Stomach.*—Dr. Otto, of Annaberg in Saxony, relates in *Hufeland's Journal*, for February, 1833, an interesting case of hypertrophy of the muscular coat of the stomach, a pathological condition of rare occurrence. Morgagni, Haller, Baillie, do not mention it. Meckel, in his Pathological Anatomy, only observes in a general manner, that the parietes, especially the muscular coat of the stomach of great eaters, are thick. Beclard in his additions to Bichat's General Anatomy, does not notice this kind of hypertrophy, and speaks only of that of the heart and bladder. Louis has noticed this subject more particularly than any other French writer, in his Anatomico-pathological Researches.—When treating of cancer of the pylorus, he quotes two cases of hypertrophy of the muscular coat of the stomach, which he compares to the parietes of the ventricles of the heart, the fasciculi were prominent; in both cases there was scirrhus of the pylorus, and M. Louis proposed the question, whether the contraction of the duodenal orifice of the stomach was the cause of the hypertrophy. In the following case there was neither schirrus nor contraction of the pylorus, and the opinion of M. Louis that these two diseases are independant on account of the frequency of the one and the rarity of the other, is confirmed.

A woman, forty-nine years of age, thin, sanguineous temperament, mother of several children, had experienced many domestic troubles, from which she endeavored to distract her mind, by indulging her appetite for eating, which became incredibly voracious. In the summer of 1827, she complained of periodical dyspnœa, and swelling of the right foot; her menses ceased; she became emaciated; her appearance was that of a person in bad health. Nevertheless, she had no tumefaction of the abdomen, nor pain there on pressure; her appetite was good: evacuations regular; tongue clean, and she never complained of nausea, borborygmy, hiccup, or laborious digestion. The respiration was easy, pulsation of the heart feeble, the pulse normal. She was remarkably depressed in spirits. The predominant symptom consisted in a periodical dyspnœa, which recurred every evening, sometimes even during the night, and produced a sensation of weight in the lower part of the abdomen, which rose up like a ball towards the heart, and impeded her breathing. These symptoms continued for six or eight minutes, and always a long time subsequent to a meal. Their intensity became so great, that the patient was at times delerious; she even at one time attempted to hang herself. At the commencement of winter the emaciation made alarming progress, without the appetite being diminished, or the digestion deranged, and although the patient was so enfeebled, that she could not quit her bed. The violence of the paroxysms constantly increased; the marasmus took place, with subsultus tendinum, weakness of the organs of sense, coma, loss of sensibility, delirium, and finally, death on the 19th of December, 1827.

Autopsy, ten hours after death.—The pectora organs were healthy; the heart small; the pericardium contained a little serosity; omentum

wanting; liver and spleen normal; stomach shriveled and thickened, especially towards the pyloric region and along the larger curvature, which appeared less extended than the smaller, its blood vessels empty; its mucous membrane thin, almost translucent, ordinary consistence, covered with a viscid and thick mucus, elevated by numerous muscular fasciculi, the size of a goosequill, the direction of which was from the great cul-de-sac to the pylorus. These gave to the internal face of the stomach the appearance of that of the heart. Beneath these fasciculi the muscular coat formed a layer of half an inch in thickness. The remainder of the intestinal canal was in a normal state, as were also the urinary passages. This case is interesting in a double point of view; 1, in a pathological aspect, connecting the stomach with the other muscular sacs; 2, by the almost total absence of symptoms referrible to the digestive organs.—*Rev. Med. Aug.* 1833.—*Am. Journal of the Medical Sciences.*

10. *Remarks on Local Diseases.—Pathology of the Diseases of the Digestive System.* By William Stokes, M. D. Extracted from a lecture on the Theory and Practice of Medicine, delivered at the Medical School, Park street, Dublin. Session 1833–4.—Gentlemen, I commence with the digestive system. I am anxious to do this for several reasons, but for none more than this—that to the improvements made in the pathology of the digestive system we owe much of the rapid advancement of modern practical medicine. Before our time the pathology of the digestive system was very little known, and if not quite a *terra incognita* in medicine, there existed respecting it a great deal of misconception. The schools were deeply tinctured with the doctrines of the Humoralists and the Brownists; and this had the effect of giving rise to irrational theories and false notions of the true state of the system in disease. The humoral pathologists, who sought for disease in an alteration of the fluids alone, neglected the study of visceral lesions; and when they turned their attention to the digestive system, they only considered it, its secretions, and not its actual condition or the state of its sympathies. The liver, with them, was an organ of the highest importance, and the secretion of bile claimed a vast share of their attention. To it they gave a paramount influence, and to an alteration in its quantity and quality they attributed most of the changes which occur, not only in the digestive tube, but also in the whole system; and hence the great object of their practice was to attempt to restore its healthy condition, convinced that if this were once accomplished, every thing would go on favorably. From this too, arose the purgative plan of treatment in various forms of intestinal disease, a plan too often rashly pursued, even where there was unequivocal proof of inflammation in the digestive tube. Their sole purpose was to evacuate sordes, to produce a flow of healthy bile, and to eliminate depraved secretions; and they did this without possessing any knowledge of local inflammation, or of the effects of disease of the digestive system on other organs. The followers of Brown, on the other hand, only admitted disease of the digestive system in a state of intense,

manifest violence, as for instance, ileus, or violent enteritis; but in the great majority of cases, they did not recognize intestinal inflammation, because their prominent symptom was prostration, or to use their own terms, an asthenic condition of the whole system. They saw nothing but prostration; they prescribed for nothing but debility; they gave wine instead of iced water; ordered bark instead of local depletion. They exasperated the disease by stimulants; and then, thinking they had not gone far enough, they heightened the stimulant and doubled the debility.

Another cause of the low state of pathology in former times was the general neglect of dissection. The fact is, that in fever there were no post mortem examination made, until very lately. Morgagni, who did so much for pathological anatomy on almost every other subject, did litttle for fever, because he was afraid to dissect the bodies of persons who had died of a contagious disease. This was the idea which prevailed among the older pathologists; and hence this source of knowledge was avoided, and for many successive centuries the state of the viscera in fever was a matter of speculation, doubt, and uncertainty. Even at the present day it is only done by the ardent pathologist, who cares not about filth and stench, and who had rather encounter the miasm of contagion than remain in the mists of error. Nothing is more common, I regret to say, even at the present time, than this:—A person says he has dissected cases of fever, and when asked whether he had examined the intestinal canal, he says that the intestines appeared healthy, but he did not make any particular inspection of them; he only opened the belly, and finding no trace of inflammation in the peritoneum, he went no further. Now nothing can be more useless than such an examination. If we compare the information afforded by an inspection of the serous membranes of the three great cavities, we shall find that the least is given by an examination of that of the abdomen. Disease of the substance of the brain is rare without affections of its investing membrane, disease of the substance of the lung is exceedingly rare without the occurrence of the disease of the pleura, but you may have most extensive and fatal disease of the intestinal canal without the slightest lesion of the peritoneum. In this point, therefore, it differs from the pleura, and from the arachnoid membrane. The fact of the rarity of disease of the peritoneum in cases of disease affecting the parts beneath, was noticed by Dr. Graves and myself, in our report of the Meath Hospital, and also by Mr. Annesley, in his account of the diseases of India. You will see cases of hepatic abscess, which present a distinct tumor externally, and where you can detect a perceptible fluctuation; and yet, if you examine these cases after death, you may not find any adhesions of the peritoneum, even in the situation of the abscess. You will find the mucous and muscular coats of the colon extensively destroyed, you will see the stomach all but perforated, you will meet with cases where the whole ileum is one extensive sheet of ulcerations, with no disease in the adjacent peritoneum.

In entering on the consideration of diseases of the digestive system,

we shall begin first with the mucous expansion of the stomach and intestines, and then proceed to the affections of the solid viscera connected with them. The mucous surface of the stomach and intestines is of enormous extent and extraordinary sensibility, possessed of innumerable and powerful sympathies; its influence is felt by almost every organ in the body, formed for receiving and elaborating every thing destined for nutrition; its conditions, both in health and disease, are entitled to the deepest and most attentive consideration. To facilitate the study of its affections, and for the sake of some practical arrangement, we shall divide its diseases into five classes, beginning with the œsophagus, or that portion of the digestive tube which is above the diaphragm, and then proceeding to the stomach, duodenum, ileum, colon, and rectum. But in order to give you a clear idea of diseases of the intestinal canal, I shall commence with diseases of the stomach; because, if you consider the whole range of animal life, you will find that its functions are the most important, the stomach constituting, as it were, the source and fountain of life, which is nutrition, and giving by its existence a character to all the upper classes of animals. No organ possesses such remarkable sympathies as the stomach, whether we look upon them as sympathies of organic or animal life, none possesses such remarkable power and influence in modifying the conditions of every part of the system. But, putting aside physiological reasons, let us come to practical matters. The success of almost every form of medical treatment, all the advantages to be derived from the administration of internal medicine depend upon the stomach; in fact, in whatever point of view we consider it, we must look upon a knowledge of the state of the stomach as the great key to sound and successful practice.

It is a most useful reflection to consider the extraordinary frequency of disease in some portion of the digestive tube. It is now admitted by every person possessed of experience in the causes of mortality, that more human beings die with acute or chronic diseases of the digestive tube than with diseases of any other part of the system. This has been established by numerous investigations, and is admitted by the best pathologists; and, indeed, I think it can be easily accounted for, when we call to mind how many persons die of some form of fever or other, when we look to the ravages of remittent and yellow fever, to the hundreds of thousands who annually perish by the various classes of fevers. Now in almost every one of these cases, disease of the digestive system forms one of the most prominent pathological characters. Recollect, besides, all that die of dysentery, whether sporadic or simple, and here is inflammation of the colon; see too, how many die of diarrhœa,—here too, there is intestinal disease; remember how many die of the malignant intermittent of the West Indies, in which unequivocal proofs of disease of the stomach and intestines have been found. Observe what a close connexion there is between tabes mesenterica, and inflammation of the mucous membrane and surface of the intestines; think what a vast number of persons fall victims to the harassing effects of constipation and dyspepsia; and re-

collect there is a host of diseases in which the train of morbid phenomena commences in the digestive system, and then exhibits itself by functional alteration or organic diseases of other parts.

Gentlemen, we recognize the presence of disease in the digestive tube, first by the local phenomena and the lesion of the digestive function, and next by the sympathetic relations of other parts, by the sympathies of the respiratory system, of the circulation of the skin and of the nervous system. I shall enumerate the local phenomena and functional lesions: vomiting, anorexia, thirst, jaundice, pain, tenderness on pressure, tympanitis, changes in the character and quality of the discharges, constipation. Here are a set of functional lesions and local phenomena, let us now consider the sympathetic relations; these are fever, heat of the skin, suppression of the cutaneous secretion, suppression of the secretion of urine, morbid states of the tongue and pulse, pains in the chest and cough, hurried breathing, and palpitations of the heart. In the next place, we may have prostration of strength, delirium, coma, convulsions, tetanic spasms, and other symptoms of functional diseases of the brain; these are all sympathies of relation. Now, in the first place, I have to remark, that there is a great deal of variety in the combination of these symptoms. On what does this depend? on a variety of circumstances; sometimes on the intensity or extent of the inflammation; sometimes on the situation of the disease; sometimes on the complication of the affection; sometimes on the various modes and degrees of susceptibility of the individual. All these causes tend to produce a great variety in the disease, and an extensive modification of the sympathetic relations. For instance, in some cases, inflammation of the stomach and intestines is so slight that the patient is not prevented from going about and pursuing his ordinary avocations; in others, on the contrary, the patients are struck down at once by the violence of the disease, and are carried off by the fever which accompanies it before the inflammation is completely developed. It varies also according to situation; there is a difference between gastritis and dysentery, in the former we have an inactive state of the great intestine, and consequent constipation in the latter, the colon is thrown into violent action, and there are frequent dejections. Disease of the duodenum is attended with a very remarkable peculiarity, being very frequently complicated with jaundice; here is a modification produced by situation. Again, inflammation of the ileum is attended with a very curious peculiarity, namely, the absence of pain. The patient states, that he feels unwell, he has obscure symptoms of intestinal disease, but it is neither dysentery nor gastritis; you investigate it with care and find that the ileum is in a state of inflammation. Yet the patient does not complain of any pain, and this is another peculiarity depending on situation.

But in considering the differences which depend upon intensity, extent, and situation of disease of the intestinal canal, we must not omit those which depend upon tissue. If disease be confined to the mucous membrane of the intestines alone, we may have an extremely diffused and extensive inflammation sufficient to destroy life, without

any pain being complained of by the patient, it is a painless though fatal disease. Recollect this, extensive and fatal inflammation without pain. In former times the ideas of pain and inflammation were inseparable. Thanks to the light which pathology has shed upon modern medical science we are now acquainted with this seeming anomaly, and can conceive the existence of extensive disease of mucous surfaces unaccompanied by pain. But let the inflammation seize on the muscular tissue, the character of the disease is instantly changed, and the pain is dreadful. Here is a case in which difference of tissue is to be taken into consideration.

The phenomena and sympathetic relations of intestinal disease may vary also according to its complication, and here we come to investigate one of the most beautiful laws of the human economy, namely that the more complicated a disease is the more latent will be any local, lesion. This is a point that should never be forgotten. For instance, enteritis by itself is much more easily recognized than when complicated with pneumonia, or with irritation of the brain, and gastritis is but too often completely masked by being combined with irritation of the bronchial mucous membrane. Lastly, we have the varieties which depend on different degrees of susceptibility. In one person we have only slight cerebral irritation, in another high excitement, in a third delirium and extraordinary convulsions. The variety, then, in the modifications of disease, and the combinations of sympathies is very great, and is referable to the extent and intensity of the inflammation, difference of situation, complication of disease, difference of tissue, and different degrees of susceptibility. I shall give examples of these at my next lecture, and then proceed to the pathology and treatment of gastritis.—*London Med. and Surg. Journal, Jan.* 4, 1834. —*Am. Journal of the Med. Sciences.*

11. *Ointment for the cure of Porrigo.*—M. Biett considers the following as one of the most powerful agents for the cure of porrigo. ℞. Ioduret. sulph, ℈j. to ʒs.; axung. ʒj. M. A drachm is usually employed at each friction.—*Bulletin Gen. de Therapeutique, Tom. IV.*, 1833. —*Am. Jour. of the Med. Sciences.*

12. M. Aubergier's *Pomatum for Preventing the Hair from Falling Out.*—℞. Prepared marrow of beef, ʒvj.; sweet almond oil, ʒij.; red Peruvian bark, ʒj. The powdered bark is to be moistened with a small portion of the almond oil, and the remainder then added; when the mixture is made, the marrow is to be melted at a moderate heat, and gradually added to the preceding ingredients in a mortar, and rubbed together until cold. It is asserted to have never failed in preserving the hair.—*Bulletin Gen. de Therapeutique—Am. Jour. Med. Sciences.*

13. *Improved Method of Administering Epsom Salts.*—Dr. James Henry, of Dublin, recommends the sulphate of magnesia given according to the following formula as an agreeable, safe and efficacious

purgative. Saturate any quantity of cold water with sulphate of magnesia; filter through paper, and add to every seven ounces of the solution one ounce of the *dilute* sulphuric acid of the Dublin or Edinburgh pharmacopœias.

Dose.—One table-spoonful in a wine glass of water.*

In those cases in which the bowels are easily moved, a single table-spoonful is sufficient to produce a considerable purgative effect.

In ordinary cases, a table-spoonful taken an hour or two before breakfast produces one or two evacuations immediately after breakfast.

In other cases, the dose is to be repeated once or twice, at intervals of two or three hours, according to circumstances.

Where the symptoms are urgent, a table-spoonful may be given every hour until the effect is produced; and where the urgency is extreme, a saturated solution of the salt, containing only one-half of the above-mentioned quantity of acid, may be given in doses of two table spoonfuls, repeated every hour.

This combination of sulphate of magnesia and sulphuric acid, administered according to the preceding directions, possesses the following properties.

1. It is an effectual purgative, never failing to move the bowels in all cases in which the bowels can be moved by medicine. I am not acquainted with any purgative which is more certainly effectual.

2. It is quick in its operations; the effect being produced in ordinary cases within two or three hours after the first or second dose, and a necessity rarely arising for the continuance of the medicine beyond the third dose.

3. It is safe, never purging so as to produce exhaustion.

4. It does not give rise to the slightest degree of nausea, but, on the contrary,

5. Quickly puts a stop to nausea, and appeases irritability of the stomach.

6. Flatulence, that most distressing attendant upon constipated bowels, is immediately and signally relieved by this medicine, which not only promotes the expulsion of the *flatus* already generated, but diminishes the tendency to its further secretion.

7. In a few minutes after this medicine has been swallowed, so agreeable a sensation of warmth is felt in the stomach, that the medicine is not only readily taken, but even relished by many persons whose stomach will not retain any other liquid purgative, unless impregnated with the hottest aromatic tinctures.

8. The operation of this medicine is not attended by either sickness, faintishness, or griping. In this respect the acid saline solution possesses a remarkable superiority over all the purgatives in common use.

9. This medicine can be taken every day, or every second day, for a considerable length of time, not only without impairing the stomach

* Each table-spoonful contains about two drachms of sulphate of magnesia, and half a drachm of dilute sulphuric acid.

or other digestive organs, but with manifest advantage to them.*

10. The continued use of this medicine does not produce that irritation of the *rectum* which so commonly attends the continued use of other purgatives.

11. This medicine is not disagreeable to the sight, being perfectly limpid and transparent as the purest spring water.

12. It has no smell.

13. The bitter nauseous flavor of the sulphate of magnesia being almost completely hidden by the acid, the taste of the solution can hardly be said to be at all disagreeable, and it is certainly much less so than that of most other purgative liquid purgatives.

14. It is cheap.

15. It is easily procured every where.

16. It keeps for an unlimited length of time.

From the experience of three years, during which I have made daily use of this purgative in the course of my practice as a physician, I have ascertained that the acid saline solution possesses the properties which I have just enumerated.—*Edin. Med. and Surg. Journal, Jan.* 1834.—*Am. Journal of the Medical Sciences.*

14. *Iodine in Mercurial Salivation.*—In our last No. we stated that iodine had been successfully employed in Germany as a cure for mercurial salivation. We are now enabled to furnish some further details as given by Dr. KLUGE, of Berlin, in *Hecker's Medical Journal.*

"Professor Knod Von Helmenstreitt, in Aschauffenburg, was the first who recommended *iodine in mercurial salivation.* (See Hufelan's Journal, May, 1832.) As the syphilic wards of the great hospital, (Charité) in Berlin, afford numerous examples of this affection, I determined to give iodine a fair trial, and for this purpose I selected seventeen cases, viz. twelve women and five men, all of whom labored under severe mercurial salivation. Helmenstreitt's first directions were to dissolve five grains of iodine in two drachms of spirit of wine, to which two ounces of cinnamon water, and half an ounce of syrup are to be added. Of this the patient was to take at first half a tablespoonful four times a day, which dose was to be gradually augmented two, four, six or even eight grains daily. His latter directions prescribed two grains, or even more, the first day, which dose was to be rapidly increased.

"Two young women who lost four or five pints of saliva daily, were cured in three days by eight grains. One man and one woman got well in four days, having taken ten grains. In two men and four women the ptyalism ceased entirely in six days, during which each had taken from twelve to sixteen grains. In two men and two women the spitting was cured on the seventh day after iodine had been taken to the amount of from twenty to twenty-eight grains. In the latter cases

* The frequently repeated contact of the acid saline solution being injurious to the teeth, is is useful to adopt the precaution of taking the medicine through a quill, or from the spout of a small tea-pot, whenever it is necessary to continue its use for any length of time.

it was, however, remarked, that the great pain of mouth and fœtor of the breath were notably diminished after one day's use of the iodine. In two young women the remedy appeared at first to be of little or no use; in both the salivation amounted to three or four pints daily at the termination of the seventh day, and the only advantage gained appeared to be a certain diminution of soreness of mouth. One of these patients was then obliged to desist from the use of the remedy on account of some constitutional symptoms, and I looked upon this case as a failure. This conclusion was however too hastily made, for the good effects of the iodine began to appear on the following day, and on the third day after she had left it off, that is, on the eleventh from the date of its first exhibition, all morbid secretion of saliva had disappeared, and the gums had very nearly recovered their healthy appearance; in short the patient had recovered, having consumed thirty-four grains of iodine. In the other young woman we stopped the exhibition of iodine on the tenth day, at which time she had taken thirty-six grains, with the effect of diminishing the daily secretion of saliva from five to three pints On the twelfth day she was well.

"In one girl the accidental occurrence of erysipelas of the face prevented the continuance of the remedy. The use of the iodine did not produce in any one of the patients any disagreeable or untoward symptoms, and as I kept them all for some time in hospital after the salivation had ceased, I have the pleasure of likewise testifying that the cure was not only safe, but permanent."

Dr. Graves of Dublin, has also tried the effects of iodine in arresting salivation, with favorable results.—*Dublin Journal of Med. and Chem. Sciences, Jan.* 1834.—*Am. Jour. of Med. Sciences.*

15 *Remarks on the Nature of Neuralgias, and their Treatment.*—By M. Perry.—As the vast majority of neuralgic affections do not terminate fatally, the lesions which they may produce in the nervous tissue, remain as yet almost unknown; and it is impossible for us to decide whether an irritation, or even indeed a hyperemia has, or has not existed. The larger proportion of cases of pharyngitis treated at the hospitals Salpétriere and La Pitié, though exhibiting a short time before death all the symptoms of this affection, when examined after death, offered no traces whatever of the disease. If such is the case in inflammations of the mucous membranes, may we not with more reason attribute to the affections of the nervous system a similar series of phenomena. The morbid lesion which attacks the nervous trunk, may in like manner affect separately and independantly the numerous filaments which enter into its composition, and which are so exceedingly minute, that the anatomist labors in vain to isolate them. How is it possible then, for us to decide upon the different shades or tints which these filaments may assume. This circumstance is deserving of recollection, for it is by the color of the nervous matter of the brain, that the pathologist pronounces upon the previous existence of inflammation in this organ. The blood-vessels supplying these nervous filaments are also so exceedingly minute, that to be able to appreciate in

them a state of hyperemia, it is necessary that they should be enormously enlarged. Moreover, the cellular tissue of a nerve, which connects its filaments to each other, may take on inflammation, and present a red color, without the filaments themselves being at all concerned. The causes which operate in the production of neuralgic affections, are the same which produce in other organs irritation and hyperemia. A contusion, pressure, violent and sudden muscular contraction, a carious tooth operating as an irritant to the nerve supplying it, an organic lesion of the heart, an articular rheumatism, which, whatever may be said to the contrary, is in fact an inflammation of the joints; a tumor situated upon a nerve, an active inflammation of the surface of the body, extension of the inflammatory action from the intestines to the nerves supplying them, certain movements of the muscles of the head, acting upon some of the neighboring nerves, extension of the irritation which accompanies cancer, and the pressure which an enlarged gland sometimes produces upon a nerve, are some of the appreciable causes which tend to produce these affections; and although we are unable to seize upon these, or similar ones in all cases, yet we should not conclude on this account, that they were not present, but rather ascribe to the imperfections of our means of investigation, their escape from our senses! The group of symptoms does not distinguish neuralgia from neuritis, only the one is transitory in its effects, whilst the other remains stationary for some time. This is to be attributed to the morbid action resting in the first case at its first or mildest stage, whereas, in the second, it passes on to its second, or most violent degree. Perhaps the one may be considered as bearing the same relation to the other, that a cerebral congestion does to a softening of the brain. This comparison, it is true, does not throw much light upon the nature of the case, for we have yet to form positive opinions relative to cerebral congestions and cerebral softenings; nevertheless, the analogy between the two affections is so strong, that it may be well to make use of the simile. Because the pain is not so augmented by pressure, because it assumes various characters, because it may be subject to remissions, and because there is neither redness, heat, nor swelling, nor indeed any of the precursors of inflammatory action present, we must not conclude, that no congestion or inflammation of the nerve exists; for pressure does not always produce pain in cases of congestion or inflammation in other parts. Moreover, the hyperemias which succeed to a lesion of a nerve, or which may accompany it, are subject both to variations in their nature, as well as to remissions. Again, from the nerve being invisible, it is of course impossible to observe the different changes in color, the degree of heat, or of swelling which it may undergo; and finally, there are many cases of inflammation, in which none of the precursory or pathognomonic symptoms of this condition show themselves. M. Andral has well observed, that the symptoms given by authors as characterizing these affections, may lead us to mistake a neuralgia for a neuritis, and vice versa. He considers the best means of distinguishing the two affections from each other, to be the augmentation in volume of the nerve affected with neuritis, but un-

fortunately in the great majority of cases this augmentation cannot be detected. The results of different methods of treatment do not establish more definitely the differences that exist between the two diseases, for it has happened, that in cases which were essentially neuralgias, sanguine evacuations either produced an amelioration of the symptoms, or cured them completely, or changed them from continued to intermittent, and this too as speedily and as effectually as they did in cases which were considered as well marked neutritis. On the other hand, the sulphate of quinine operated very beneficially in a case, the intermittent symptoms of which seemed to be dependant upon neuritis, which had originally been accompanied by a physical lesion of the nerve, (a neuroma.) It most frequently proves useful in those cases in which the previous application of leeches had produced decided relief. Hence, even admitting theoretically, that the neuralgic affections constitute two degrees in the lesion of a nerve, or even that they are essentially different in their nature, it must be confessed, that neither the pathological phenomenon, nor indeed the treatment, furnish signs sufficiently well-marked to induce us to form very different therapeutic indications for these two morbid conditions.

The same remarks apply to the efforts which have been made to establish a diagnosis between neuromyelitis and neurilemmitis. The observation of Riel has been copied by every one, without its truth having ever been properly ascertained; it would have been much better to have tested its truth by repeating his experiment, and until it is positively shown that the neurilema of a nervous filament may take on a state of inflammation, whilst the pulp it contains remains unharmed, and vice versa, we cannot give credit to the subtle divisions made of this class of diseases, which divisions were certainly never deduced from sound pathological investigation. The neuromas mentioned by Galen, Valsalva, and Petit, and upon which M. M. Dupuytren, Alexander, Boisseau, Beclard, Descot, Andral, Schiffner, and Cruveilhier, have published such important and interesting observations, seem in some cases to be dependent upon the previous existence of some cancerous affection, and in others to result from the morbid action which constitutes neuralgia and neuritis, which affections in turn make their appearance. Their symptoms are the same, though the treatment is different, for in three cases we know positively the situation of the organic lesion, and also that where other remedies have failed, an operation is absolutely required to affect a cure. There are, however, certain distinctions which may be drawn between the neuralgias and the neurites, according to the nature of the cause producing them, or the peculiar nerve attached. M. Lembert, who has published some very useful observations upon the endermic method of medication, is induced to believe from several facts which he has noticed, that certain nerves, which he thinks are more vascular than others, and which preside over the functions of touch and nutrition, such for instance, as the branches of the fifth pair, are more disposed than the other nerves of the body to attacks of neuritis, and less to attacks of neuralgia, and that sanguine emissions are more useful in the first class than in the se-

cond. Experience and future observation upon the functions of the different nerves must decide the merits of this opinion. In all cases where the nerve undergoes a morbid alteration sufficiently violent to give rise to symptoms, a peculiar pain, which is propagated through all the nervous ramifications, and which in some cases seems to proceed from the branches to the trunk, manifests itself. The sensation produced, is that of stiffness or painful numbness, accompanied by a pricking and vibratory feeling, which continues a longer or a shorter period, according to the nature of the circumstances that determine its production. If the exciting causes suddenly cease to operate, and if the lesion sustained by the nerve has been trifling in its extent, the pain gradually subsides, and in a short time every thing reassumes its original healthy action. (The pain caused by pressure of the cubital nerve at the elbow-joint, or of the sciatic nerve where it emerges from the pelvis, or in the popliteal space, and that produced by the pressure of the child's head during labour, may be cited as examples of this kind.) If, however, the exciting cause is more violent in its operation, the painful sensations continue for a longer time, or should they perchance abate or disappear for a time, soon return. The exacerbations take place from time to time, and in some cases obey the law of periodicity, for in disease, as well as in health, the nervous functions possess a tendency towards intermission. (The pain caused by a carious tooth, constituting odontalgia, that produced by cancerous tumours in the aim-pit and uterus, which irritate or compress the nervous trunks of the arm and thigh, &c., may be placed among the examples of this species.) In these cases the pain persists as long as the cause producing it continues to operate, and is incurable unless the latter be removed. The pain which is at first confined to the trunk, or filament affected, may gradually extend itself to the neighbouring nerves, (odontalgia following some of the various neuralgias of the face,) or it may make its appearance in several points of the nervous system at the same time. In these cases the secondary neuralgic symtoms may generally be relieved, but it is not until the primitive affection is recognized and eradicated, that we can trust to their non-appearance again. Consecutively to the operation of either a transitory or persistant cause, the nerve may become the seat of a simple irritation, which cannot be conceived to occur, except in cases of anemia or chlorosis, without a congestion of the sanguine capillaries, since all organs in a state of excitation have their capillaries injected. In this case, however, we are obliged to acknowledge the existence of such a state of things, by analogy alone, since it is impossible to examine the peculiar condition of the nerve during life, and if examined after death it does not present the same characters, which it would have done if observed during the existence of pain. Yet in cases of irridian or ophthalmic neuralgia, as soon as the symptoms declare themselves, the eyelids and the neighbouring parts are found to be in a state of congestion, if the disease is confined to this degree of excitement and primitive congestion, we have only a neuralgia produced. When an attack of neuralgia has existed for any length of time, it frequently happens that there

exists great tendency to a relapse, notwithstanding the original cause of its appearance has been completely eradicated. It seems in these cases that the system acquires a sort of habit, which it is extremely difficult to overcome. If the cause has operated with violence, or is continued for any length of time, or should the disease be augmented a degree in intensity, an inflammation of the nerve may be the result. The neuritis thus brought about may be either followed or accompanied by hypertrophy of the nerve; by a deposition of blood or pus between its filaments; by the formation of hard or scirrhous tumours in its substance; or of small cysts, the parietes of which are hard, and contain a sort of gelatinous fluid; or of encephaloid degenerations, &c. The pain experienced in the nervous trunk, or in its filaments, is so peculiar in its character, that it is impossible to confound it with any other. *It resembles precisely that which is perceived when the inner side of the elbow-joint is suddenly pressed upon or struck.* In doubtful cases of chronic rheumatism or gouty arthritis, or of musculitis, &c., the absence or presence of this peculiar sensation will decide at once the character of the affection, and it is important to bear in mind this fact in the examination of our patient.

Treatment.—Reasoning from the facts just given, the indications to be observed, and the course to be pursued in the treatment of neuralgias, seems to be as follows. 1st. Endeavour by all possible means to find out the material or organic cause which has produced, or which is at the time operating in the production of either the neuralgia or neuritis, and destroy it if possible at once.

Examples. (Extract the carious tooth in odontalgia dependent upon its irritating properties; prevent certain muscular movements which seem to operate in the production of the disease; remove tumours situated upon the nerve, &c.,) should the organic cause be entirely beyond the reach of our therapeutic agents, (as for instance in cancer of the uterus determining nervous pains,) we must content ourselves with the administration of such palliatives as we may possess. If the disease still persists after the removal of the cause which produced it; or should the cause escape our means of investigation; or the attack be of recent occurrence, or even chronic in robust subjects, and sometimes also in persons of a nervous temperament; it will be well, before resorting to any other method of treatment, to try the effect of antiphlogistic remedies. The extent to which these should be carried, must of course depend upon the quantity of blood the patient can afford to lose; which circumstances may be determined by an examination of his arteries, veins, and capillary circulation, and by the percussion of such organs as are highly vascular, and capable of containing large quantities of blood. General blood-letting which proved so successful in the hands of Cotugno, may occasionally be resorted to; but copious local depletion effected by the application of a large number of leeches along the course of the affected nerve, together with rest and poultices, repeated pro re nata, is the course of treatment usually pursued in this stage. Those who doubt the efficacy of sanguine evacuations in such cases, have either not properly studied

their effects, or have seen them employed with too much rashness, or with too great timidity. What have we to fear from blood-letting? Is it the momentary debility which it produces? If the precautions which we have elsewhere indicated are observed, the syncope can never become so excessive as to prove dangerous. (*Vide Procede Oper. de la Percussion, &c.*, p. 249.) Is it consecutive debility? If, in the first instance, we do not establish in the system a dangerous degree of debility, by extracting too large a quantity of blood, is there any reason why we should anticipate the occurrence of a consecutive one? Is it the tediousness of the convalescence? This will only take place when the patient is confined to a vigorous diet. At La Pitie, where sanguine emissions were carried to a great extent, but the patient at the same time properly nourished, the transition from a state of disease to perfect health, was, in the majority of cases, almost immediate. Moreover, the animals used in the experiments on this subject, and from whom large quantities of blood were extracted, speedily regained their usual quantity of this fluid. We should not, therefore, doubt the importance of blood-letting in these cases, but it is true that it must be conducted with prudence, and with a proper knowledge of its effects. In the hands of those familiar with its powers, it can never prove dangerous; it only becomes so when ordered by the inexperienced and rash. If the symptoms are ameliorated by this plan of treatment, it should be continued; but we must recollect, that although sanguine emissions when early prescribed are not generally productive of danger, it is not so with those used at a later date. We should, therefore, be guarded in ordering a repetition of this evacuation. These remedies alone frequently prove sufficient to effect a radical cure. When the antiphlogistic remedies have been tried without success, and where the disease does not manifest a tendency to assume an intermittent type, we may resort to the application of vesicatories along the tract of the nerve, according to the plan of Cotugno, which in his hands was very successful. The blister should be allowed to remain but a short time in one spot, and must then be applied to another in the neighbourhood. The form of the blister is also of some importance. In general it should be long and narrow, so as to apply itself to the part of the nerve. Almost every practitioner has witnessed the success of this remedy. In several instances, however, the blister has failed to produce the anticipated effect; we may here denude the cutis of its cuticle, and resort to the endermic method of medication. The narcotics, for instance, the acetate, and particularly the hydrochlorate of morphia, the stramonium, belladonna, henbane, &c., may all be resorted to. In some cases we have found this method prove exceedingly useful, in others again it has entirely failed. A woman of the Salpétriere had complained for several days of an acute pain in the temple, which seemed to be neuralgic in its character; a blister was ordered to be applied to the part, for the purpose of removing the cuticle, and the denuded cutis to be sprinkled over with a grain of the hydrochlorate of morphia. The day after the application of the blister, the patient expressed himself as entirely relieved. All the benefit derived was attribu-

ted to the application of the opium; it was found afterwards, however, that the opium had not been applied, and that the blister alone had effected the cure. To avoid for the future, attributing to the absorption of some remedy, that which is due to the operation of the blister alone, it would be well to apply the blister in a strip of about two lines breadth, and then place the narcotic upon the denuded surface, which of course will be exceedingly small. When the narcotic, opium, for instance, has failed when applied externally in producing its effects, we may exhibit it internally, either in the shape of an enema, or in a draught. These means, however, though they generally produce a momentary alleviation of the symptoms, rarely effect a radical cure. Should the symptoms appear periodically—whether after the lapse of a day or of several weeks, or of several hours, or even less time; if from the influence of sanguine emissions, the disease changes from a continued, with occasional exacerbations, to an intermittent form, we may resort to the administration of the sulphate of quinine in large doses, as if it were a case of intermittent fever! We must not trust to small doses, but give it in doses of ten, fifteen, and twenty grains; the largest dose being given immediately after the occurrence of the attack. If the succeeding paroxysms should be milder in their character, or the interval between them increased, we may either continue in larger doses the sulphate of quinine, or suspend its employment for several days, in order to be able to resort to it suddenly in very large quantities. In some cases it has seemed to me, that a repetition of the local sanguine emission during the paroxysm has been productive of benefit; and that the sulphate of quinine administered immediately afterwards operated more efficaciously upon the approaching attack. In cases of amenia, where the skin and lips are pale, and in young women whose organs contain but little blood, the sub-carbonate of iron sometimes produces the most happy effects, particularly in cases accompanied with irregular menstruation, and where the menstrual blood is paler than usual. Here we must be very cautious how we prescribe sanguine depletion. As the brain, in cases of syncope and anemia, frequently exhibits symptoms precisely similar to those produced by a congestion of its substance, in like manner may the nerves, in cases where there exists a deficiency of blood in the system, should they perchance become irritated, be accompanied by all the symptoms of irritation with congestion. When all our means have failed, and the treatment founded upon rational views of the disease proved unsuccessful, we might then have recourse to empirical remedies. The best to commence with are those which are supposed to operate with most safety to the patient. The pills of Meglin have sometimes proved useful; the essential oil of turpentine has also produced beneficial effects in the practice of M. Martinet. Finally, cauterization of the nerve, as practised by Andre, or its section which Galen is said to have resorted to, and which Nuck so highly recommends, and which in the hands of MM. Maréchal, Louis, Pouteau, Guerin and Delpeck, has produced such varied effects, may be tried. Several very interesting observations upon this latter method of treatment, as well as ma-

ny important facts in the history of the neuralgia's, will be found in a very remarkable and exceedingly erudite memoir, that has just been published by M. Halliday.—*Gaz. Med. de paris, February 2d*, 1833. —*Am. Jour. Med. Sciences.*

15. *On Sanguineous Tumours of the Cranium.*—The most common and least dangerous sort of these bloody swellings is when the blood is effused between the aponeurosis of the occipito-frontalis muscle, and the common integuments.—They are very often observed on the heads of new-born infants, and are no doubt caused by the severe contution of the cranium, during its expulsion through the pelvis. This is the "caput succedaneum" of some German authors. In general, it may be easily discussed under the use of resolvent applications.

The second variety of bloody tumours of the scalp, and which is usally caused by contution or other external violence, is that which has been described by M. Zeller under the name of cephalæmatomié. The blood is diffused between the aponeurosis and pericranium. The German and Italian writers have often confounded this variety with the former;—it is only on this supposition, that we can account for their differences of opinion with respect to the danger or not of these bloody swellings, and to the treatment which they have recommended; some advising the knife to be used, others trusting to discutient lotions.

The fluctuation is not so distinct as the first-mentioned kind, and the blood becomes diffused more readily, so that it does not generally present the appearance of a depression in the centre, and an elevated hardened border round; signs which have sometimes led surgeons to suppose that there was a depressed fracture of the bone, when the effects of the bruise were nothing but an ecchymosed subcutaneous swelling. In this sort the aponeurosis sometimes form a solid cyst round the extravasated blood. Whenever the pericranium becomes detached from the skull the injury assumes a more grave importance;—we cannot with certainty predict that the bone may not become ultimately necrosed. But this is rare, and authors have no doubt often committed the error of supposing that the blood was in contact with the bones, when the investing membrane of the latter was quite entire and firmly adhering.

M. Velpeau mentions a case of a child, only ten days old, being brought to him for a supposed hernia of the brain.

A soft fluctuating tumour covered the greater part of the left parietal, part of the temporal, and almost the whole of the occipital bone. The dispersion of this swelling was easily effected in the course of a few days. It is quite an unusual occurrence, that the pericranium is detached from the bone in new-born infants, however difficult the delivery may have been, and however large the quantity of blood effused. Sometimes, indeed, when a true encephalocele does exist, we meet with bloody swellings, which have their seat next to the bone, on others parts of the head;—such cases are very generally fatal.

The third species of swelling is situated deeper than either of the preceding two. Chelius, in his manual of Surgery, published in 1827

at Heidelberg, places it in the diploe of the bones; M. Velpeau thinks that it more frequently begins between the bone and the dura mata, although a case mentioned to him by M. Lauth is more favourable to the other opinion. A man received a blow with a cudgel on the parietal bone; but little notice was taken of it, and in the course of a few days he appeared to have quite recovered. Several months after severe pains were felt in the part diametrically opposite; (are we to understand the parietal bone of the other side?) and it was judged proper to trephine the bone there; but no correct information as to the true nature of the disease was obtained by the operation. After death, a fungoid mass was discovered, of the size of a large walnut, flattened, and, as it were, encysted in the diploe of the bone, where the blow had been received.

M. Velpeau has seen two cases in which blood was effused between the dura mater and bone during accouchement. It is very probable that the blood retained in this situation may undergo certain changes and ultimately give rise to some of the cranial fungoid tumours.—*Jour. Hebdomadaire.—Am. Jour. Med. Sciences.*

16. *Stricture of the Rectum treated by the Introduction of a Tent, by a New Process.* By M. Tanchou.—That there exists great analogy between stercoral and urinary fistulæ is not disputed; the following observation is a new proof of the correctness of this opinion. It also shows that the efforts of nature alone, are sometimes adequate to a cure; and that the formation of an artificial anus should be attempted, in all cases of either complete obliteration of the rectum, or of contraction of this gut to such a degree, as to prevent the escape of fæcal matter. It moreover proves, that the occurrence of a fistula, or the performance of this operation, are means by which the days of those affected with stricture of the rectum may at least be prolonged, though they may fail in producing a radical cure.

Case.—*Stricture of the rectum stercoral fistulæ caused by a gangrene of the breech; one of the fistulæ completely healed; a disposition to a complete cure brought about.*—Madame M. æt. 55, of a strong constitution naturally, and considerable embonpoint, was attacked in 1830 with a violent inflammation of the bowels. She was treated upon the antiphlogistic plan. During convalescence she indulged her appetite too freely, which brought on an attack of indigestion; in consequence of this her restoration to health was slow and imperfect, indeed it seems she never acquired her original sound constitution. In the beginning of 1831 she visited Angoulême, where she delivered herself up entirely to the dictates of her morbid and sensual appetite. In a short time she was seized with a diarrhœa, accompanied by colic and flatulency This increased to such an extent that she had as many as forty or fifty evacuations during the twenty-four hours; to this condition of things was soon added a constant tenesmus, which obliged her to remain almost the whole time upon the close-stool. These symptoms gradually abated, without her pursuing in fact, any method of treatment; that is to say the stools were less frequent, and occasionally she was ever

constipated, though when this was relieved she would be attacked with violent diarrhœa and severe colic. In this condition she set out on her return to Paris, where she arrived after an extremely fatiguing and hazardous journey in the month of April, 1832, I found her very much changed in appearance, she had completely lost her embonpoint, and was very pale. Her abdomen was also considerably swollen, and she suffered from the most violent colics accompanied with a constant desire to visit the close-stool. Her attempts to evacuate were either entirely nugatory, or followed by a discharge of slimy fæcal matter, or of an extremely fœtid fluid. She still refused, as formerly, to submit to any regular treatment, particularly to a rigid course of diet. Her symptoms still increasing in violence, I determined to examine the rectum, in doing which I discovered that the anterior portion of this gut, about three or four inches above the sphincter, had undergone considerable contraction; its posterior face appeared to be as yet in a healthy condition. I insisted anew upon her observance of a rigid diet, and prescribed the application of leeches to the breech, with the design of subduing the inflammation, so that a tent might be introduced; but my orders were but partially obeyed. MM. Roux and Majendie were now called in, both of whom confirmed my diagnosis, and recommended a strict attention to the treatment which I had prescribed. Notwithstanding all this, she persevered in indulging her appetite, and could not, or would not allow the tent to remain in the rectum but a few hours at a time, and occasionally passed whole days together without its being introduced at all. The disease still continued to increase, and the cavity of the gut became smaller and smaller. By degrees she became more and more feeble; emaciation increased rapidly; her complexion became straw-colored; her abdomen remained swollen, and she evidently suffered from a retention of fæces. Enemata brought away nothing; and finally, the stricture of the rectum increased to such a degree that nothing but liquids could pass through it. She also suffered intensely from colics and tenesmus. Such was the condition of the patient in the month of January, 1833. In the month of June following, (all the above-mentioned symptoms having increased in violence,) there appeared on the right buttock a swelling, which in a short time acquired an immence size. It resembled indeed, very much, both in size and shape, a small wash-hand basin. It imparted to the touch a doughy feel, and was neither inflamed nor very sensible when pressed upon. At this period she had no fæcal evacuations at all. After a time a slight degree of redness was observed upon the surface of the tumour, together with a sensation resembling that produced by the pressure of a thin dough in the cavity of a sac, which indicated either the existense of deep-seated suppuration, or the effusion of a fluid. Positive fluctuation did not exist. The anxiety, fever, and state of desperation under which the patient at this time laboured; but more particularly the supposition that the tumour was formed by a mass of extravasated fæces, induced me to decide upon making an incision into it; accordingly one three inches in length, and corresponding in direction with the apex of the buttock,

was made in its summit. This gave issue to a large quantity of very fœtid gas, fæcal matter, and a small quantity of pus; these were not encysted or collected in a mass, but seemed to be merely infiltrated. The patient was relieved, though the swelling was not sensibly diminished. On the third day after the operation, there appeared near the fold of the breech and thigh, a small gangrenous spot, which in a short time increased to such an extent as almost to touch the incisions. Thinking it the better plan to lay open this mass, I continued the first incision downwards for about three inches. The whole was then lightly dressed, after having been previously washed with chloride of lime water. The discharges from the wound were composed of fæcal matter, mixed with pus, and a gangrenous sanies. In a few days a large portion of the interior of the buttock was attacked with gangrene, and a mass of sphacelated cellular tissue, nearly equalling in size the two fists, presented itself between the lips of the wound. This was washed in the chlorine solution, and then dusted over with powdered tan-bark and quinine. The edges of the wound were dressed with strips of linen spread with storax. During this treatment, and without doubt by the efforts of nature alone, the gangrene ceased to progress; the margins of the eschar were detached; the inner surface of the buttock sloughed off, and there remained an ulcerated surface more than eight inches in diameter, and deep enough to lodge the doubled fist, which terminated above in a stercoral fistula large enough to allow the ready escape of the fæcal matters. All the symptoms produced by the retention of the fæces now ceased; the sleep became again tranquil; the appetite returned; soups and light articles of diet were easily evacuated; the fever diminished; the wound assumed a healthy appearance; granulations sprouted up from all sides; and on the 15th of August the sore had diminished at least a third; its bottom was nearly on a level with the surface of the skin; and to my great astonishment every thing indicated a speedy restoration to health.

About this time a small tumour made its appearance between the sphincter and coccyx, which soon opened; the orifice however was not sufficiently large to allow the fæces to pass readily; I therefore enlarged it. The quantity of fæces that were evacuated through the fistula, (nothing passed through the anus for two months before this time,) now began to diminish; the abdomen, which had returned nearly to its natural state, again became tense; the complexion, which had regained its clear and rosy tint, became again pallid; the colics were more frequent and violent, and she was at length obliged to keep her bed; in short, all the symptoms dependent upon a retention of fæces reappeared. I now enlarged the opening in the last tumour an inch and a half, directing the incision along the coccyx, believing that a division of the sphincter would be attended by no beneficial result. This gave issue to a large quantity of fæcal matter and pus, that had collected in this new situation. From this time forward the discharge from the original fistula daily diminished, until at length it ceased entirely, and the wound nearly healed. The injections, which formerly were discharged through several orifices, were now returned through

the last incision alone. In a word, the original fistula closed, and the course of the fæces seemed to approach the natural direction. The appetite, spirits and embonpoint of the patient returned; she is also strong enough to walk in her garden, and every thing leads us to conclude, that although a perfect cure of all her complaints will not be effected, she will at least be left with merely the inconvenience of a stercoral fistula, which will not materially shorten her days. It may even be possible, after the complete cicatrization of the breech, to unite the anus to the remaining fistula, by dividing the barrier which separates the two cavities from each other, provided this barrier is not of too great an extent, and the point of communication between the fistula and cavity of the rectum is attainable with the point of the finger. The patient would then be able, after having suffered from gangrene of her breech, accompanied by several stercoral fistulæ, to evacuate her fæces per vias naturales! The manner in which the tent was introduced into the rectum during the period that Madame M. consented to its application, merits perhaps a particular notice. For the first few days it was introduced in the form of a long conical cylinder, the point of which passed through the anus, in order that this point of the gut might suffer the least degree of pressure. But in a short time the rectum, from the combined influence of the disease, and a thickening of its parietes, becoming changed both in its shape and direction, it was found impossible to follow up its sinuosities except with a stilet. It occurred to me, that by mounting the tent in the following manner, its introduction into the stricture would be materially facilitated. I had made a little tube about an inch in length, the superior extremity of which terminated in a sort of neck; its inferior extremity was conical, and opened for the reception of a forked probe about six inches in length. The tent, (méche,) supported in its middle by the neck of the tube, was so arranged as to cover the latter completely. In order to apply it, I first introduced a long flexible probe into the rectum, and searched for the stricture. Having found it, I passed up the tent by shoving it along the probe, which being held in the stricture, and its lower extremity passed through the cavity of the cylinder, served as a conductor to the point diseased. By this means the tent was safely lodged beyond the point of stricture, without the operation being attended by fatigue to the patient, and without any portion of the intestine, except the point strictured, being subjected to any distention whatever. The stilet and conductor were then withdrawn, and the tent left in the stricture. The great advantage of this sort of méche is, that it permits the escape of flatus which sometimes collects in large quantities in these cases, and is prevented from passing out by the tents usually made use of, which block up completely the cavity of the stricture.—*Gaz. Méd. de paris, Sept. 28th,* 1833.—*Am. Jour. Med. Sciences.*

17. *The Advantages of Turning the Fœtus by the Head rather than by the Feet.*—Up to the end of the 16th century, the only mode of turning ever practised was by bringing down the head first; and we find

this conduct recommended, not only in such cases as are admitted at the present day to require artificial delivery, but even in common pelvic and feet presentations. Soon after the above-mentioned date, turning by the feet was first proposed, but it was not until the commencement of the 18th century that the practice was generally followed. One of the professors of the school of Strasburg resisted this innovation, strongly maintaining the superiority of the old regime; and his advice was approved of by many of the German practitioners. To justify this preference it was asserted that when the head presented first, the compression caused by the os uteri is not sufficient to injure the encephalic contents, and moreover, the communicant circulation between mother and child remains unobstructed; whereas in presentations of the lower extremities, the thoracic and abdominal viscera are exposed to a dangerous compression, and the fluids are driven back upon the head, thus causing frequently a fatal cerebral congestion. In confirmation of the truth of this statement, we are told that only one child in twenty delivered by the head is still-born; whereas, the proportion is one to five in feet presentations. In conclusion, it is alleged that whenever the fœtus is moveable within the uterus, it is quite as easy to effect the turning by the head as by the feet.

M. Dubois dissented from the above arguments. He contended that the described dangers of any compression on the abdomen and thorax were most unnecessarily exaggerated, and instanced two cases wherein the shoulder presented along with the head, and yet the children were delivered without any contusion of the thoracic and of the abdominal viscera.

The dread too of the retropulsion of the blood upon the head was an offspring of fancy rather than a result of experience, he did not agree with them in their belief that the os uteri exercised such a consecutive pressure as was alleged; the parts of the fœtus which have already escaped from the uterus are subjected to a less degree of pressure than those still contained within its cavity; and hence we can readily explain why the blood should be driven to and accumulated in the former. Do we not observe that when an arm is born first, the member frequently becomes much swollen? now this swelling arises from the pressure being less upon the arm than upon the rest of the body. True it may be, that in many children who die after feet presentation, visceral congestions are not unfrequently discovered; but the cause of these is the compression of the umbilical cord, and not the retropulsion of the fluids which M. Flamant believed to take place.

The compression of the cord is a necessary danger attending all births by the feet, and indeed it constitutes a very serious objection to the process of turning; the child is very often asphyxiated, and in such a case we find upon dissection the same phenomena which are observed after drowning or hanging, viz., an apoplectic plethora within the head, great congestion in the veins of the cerebrum and other viscera.

The calculations which have been adduced to prove the greater safety of turning by the head than by the feet, are not strictly correct, as will appear from the following statement of M. Dubois.

In all such calculations, to ascertain the comparative mortality of the different modes of delivery, we must be careful to exclude from our tables all cases wherein the child has died before actual accouchement has commenced; or wherein the labour has been premature, and the child may be therefore not well capable of independent life. Now the new tables which have been recently formed at the Maternité of Paris, on these principles, show, that from the 1st of June, 1829, to the 1st of June, 1833, 10724 children have been born at the hospital; of these 10262 were born by the head, 391 by the lower extremity, 59 by the trunk, and—30 by the face; of the 10262, 9867 were at the full period of gestation, and 395 were not. The 9867 may be reduced to 9837, because, in 30 of the cases the fœtus was known to be dead before delivery commenced, and the 395 premature cases may be reduced to 278; for in 83 the fœtus had been dead for some time, and in 34 it was too imperfectly developed for the maintainance of independent life.

Of the 9837 deliveries by the head at the full time, 191 were born dead; the proportion is therefore one in 51 or 52; and of the 278 prematurely born, 48 were born dead, or one in every 5 or 6. Of the 391 deliveries by the lower extremity 238 were at the full term, and 153 before the term; from the first number we must deduct 7, who were dead before labour began; and out of the remaining 231, 21 were born dead; a proportion of one to eleven. From the 153 we must deduct 63, in which the child had evidently died during pregnancy, and 30, in which it was too young for independent life; and out of the remaining 60, 10 were born dead; or one in six. From these calculations it appears among other results, that fœtus at the full period can endure the "*fatigues of accouchement*" with much greater safety than when born at an earlier period, whether they are delivered by the head or not. M. Dubois draws our attention to the important difference in the results by the previous deduction of all the cases in which the fœtus either had been dead for some time before labour, or was incabable of life when delivered. Thus had we enumerated these cases among the mortality in the 10262 head presentations, we should have had 386 deaths, or one in 25; whereas we have fixed it above at one in 51: and in the 391 feet presentations the deaths would have amounted to 134, or nearly one in two instead of one in eleven. With regard to the comparative advantages in practice of turning by the head, M. D. admits that in some cases the operation is not quite possible, [Mad. Lachapelle was wrong in denying this,] but also abundantly easy. He has himself performed it twice when the shoulder presented; but the operation is much more difficult than that of turning by the feet, and should the liquor amnii have copiously escaped, or should the uterus be firmly contracted around the child, the manœuevre is almost impracticable. In the 59 trunk presentations, two were delivered by means of turning by the head; in a third case the expulsion of a putrid fœtus took place by the shoulders; and in the remaining 56 the child was brought down by the feet. Out of the whole number 59, in 25 only did the child survive; but M. Dubois is of opin-

ion that a still smaller number would have been saved had turning by the head been tried in all.—*Med Chirurg. Rev., January,* 1834.—*Am. Jour. Med. Sciences.*

18. *Clinical Observations on Fractures of the Neck of the Femur.*—By Baron Dupuytren.—*Age at which such fractures occur.*—Fractures of the neck of the femur have attracted so much attention of late years, that we are told in most *ex professo* treatises on such subjects, that they are as well understood as those of other parts of the thigh-bone. Those, however, who have witnessed the practice of the Hotel Dieu during the past winter, must be aware that much additional light has lately been thrown upon the subject. If you examine, said M. Dupuytren, the age of different individuals who are at this moment in our wards with fractures of this part, you will perceive that they are all past 50 years of age; and among those to be hereafter pointed out to you, you will remark that there are no children, and in general very few adults. But in both sexes you will find this accident more common after 60 years of age. Never in any instance were the predisposing and exciting causes more conspicuous than here. I have never seen fracture of the neck of the thigh in an infant, and very rarely in a young person. Sabatier, however, in his interesting memoir in the transactions of the old Academy of Medicine, mentions the case of a youth of 15, who had a fracture of this kind. These lesions, on the contrary, become more frequent as life advances, and are most common between 70 and 80 years of age. It is impossible but that there must be some cause for this difference in the period of fracture of the neck of the femur at different epochs of life.

Predisposing cause.—This cause is well ascertained, and resides in the anatomical disposition of the parts, which is not the same at different ages. The neck of the femur, in fact, has not at all periods of life the same direction; and this disposition of the parts is important to be known. In early life the axis of the neck approaches to that of the body of the femur; the angle which it forms being the most open possible. The great trochanter makes but a very small projection; and we shall see by and by that falls upon this part are the most frequent cause of fracture of the neck of the femur;—that the frequency of the accident is in direct proportion to the extent to which the trochanter projects;—and that such projection is in direct proportion to the length of the neck of the bone, and the greater or smaller angle which it forms with the bone. Now we know that the trochanter lies deep in children, and that it hides itself, so to speak, behind the prominence of the os coxæ; the result of this is, that in falls on the side, the blow does not come upon it, and consequently the risk of the fracture is diminished. Another anatomical disposition renders fracture of the neck still more difficult. The shorter the bone is, the less of a right angle it makes with the body, and consequently the more it approaches the direction of the axis of the femur, and the causes of the fracture have therefore less influence on the neck. There is also another

reason why fractures of the neck of the femur are rare at an early age—namely, the great flexibility of the bony tissue, in consequence of the abundance of organic matter in the bone. In adult age, fracture of the neck of the femur is rare, but less so than in infancy; the earthy matters are more abundant than at an earlier age, but less so than they subsequently become. The neck also presents a different disposition: it is larger, and the angle which it forms with the body is much more marked than in the child. There results from this more projection of the great trochanter, and consequently more purchase for the causes tending to produce fracture, to act upon. This greater length of the neck of the femur, however, and this projection of the trochanter, vary further according to sex and individual peculiarities. Women have the neck of the femur longer, and consequently a more projecting trochanter, than men. The nearer, in the male sex, the formation approaches to that proper to the female, the more risk is there of this fracture.

If the relief of the muscles of the haunch in men presents an obstacle to the production of fracture, by diminishing the effect of falls upon the great trochanter, the thickness of the layer of fat in women fulfils the same indication: but when there is much emaciation present, women become more liable than men to the accident. Let us next inquire how it happens that old men are so much exposed to this kind of fracture. At this period of life the pelvis has acquired all its breadth; the trochanter major is more projecting: the neck of the femur longer, and inclined to a right angle. Besides, the skeleton of the old man weighs much less than that of a young adult, which depends upon the bones having lost much of their organic substance,—having a greater quantity of earthy matters, and being thus also more friable. In aged women, while the anatomical disposition retains the peculiarities formerly mentioned, the friability is even more marked than in men. Accordingly, at the Salpetriére, which is an asylum for old women, there are more cases of this nature than at the Bicetre, which is a receptacle for old men. These considerations are of importance in reference to the theory of fractures. Thus in the child the cure may be effected in three weeks or a month, while in the adult it will require a much longer period; and in those advanced in life, a hundred or a hundred and twenty days are required.

If we recapitulate briefly what we have said with respect to the predisposing causes of this fracture, we shall see that shortness of the neck of the femur, very considerable openness of the angle which it makes with the body, deficiency in the projection of the great trochanter, flexibility of the osseous tissue, and abundance of adipose matter, render it almost impossible that fracture of the neck of the femur should take place in children. In women, the less considerable obliquity of the neck relatively to the axis of the body of the bone, the length and prominence of the great trochanter, explain the greater frequency of this accident in them than in men. Sir Astly Cooper has said that fracture of the neck of the femur rarely took place before the age of fifty; but there are many exceptions to this rule. There are

also some other particular circumstances which predispose to fracture of the neck of the femur—such as rachitis and cancerous diathesis; but as these are common to all parts of the osseous system, it is unnecessary to dwell upon them here.

Exciting causes.—What, then, are the exciting causes of this fracture? Almost all the patients whom we interrogate reply that they have fallen on the great trochanter, and in such manner that they have been unable to protect themselves with the arm, as is usually done instinctively. The frequency of this cause has been recognized by all authors. Thus of thirty-six cases observed by Dessault, twenty-four were produced by falls of this kind. In infants and young persons who have fallen on this part, and who have been preserved from fracture, we meet with decollation of the epiphysis. Falls upon the trochanter are, however, far from being the sole cause of fracture of the neck of the femur; I shall point out others which play an important part: but I must first make a remark which has excited little attention; namely, that at the same time the patients fracture the bone, they bruise the external parts. I this morning examined a woman who stuttered, and answered badly the questions put to her; but on touching the great trochanter it gave her much pain, although the limb was not moved; and this led me to examine the part, when I found a large ecchymosis upon it. This fact is of some importance in directing us to the part which the patient has struck, when he is himself unable to give an account of his fall.

I have said that other causes might produce fracture of the neck. This is, in fact, what happens in a fall on the soles of the feet, or still more upon the knees; but in both cases it is necessary that the muscles be stretched and flexible. Sir Astly Cooper has observed that in London, fracture of the neck of the femur often arises from a false step off the edge of the pavement. Under such circumstances the head of the femur impinges strongly against the cotyloid cavity: from this there results an effort tending to diminish the angle which the neck makes with the body of the femur. I have also frequently observed a depression of the cotyloid cavity produced by the head of the femur, in consequence of a fall on the feet or knees.

It is not from this cause, however, but from a fall on the haunch, that this accident generally happens. In this case the neck is placed between two opposite forces; the head of the bone being pressed on the one side by the weight of the body, while the great trochanter is opposed by that against which it strikes, and the point which most usually gives way is that immediately under the head of the bone, at the upper and internal part of its neck.

It has also been thought that this fracture may arise simply from a muscular exertion, and a case is quoted in which this is said to have taken place in a negro affected with tetanus.

This fracture may likewise arise from causes directly applied. These are usually projectiles—such as cannon-balls, several instances of which I saw after the days of July.

Diagnosis.—The diagnosis of this kind of fracture is not made

without difficulty. It sometimes happens that a fall on the haunch, accompanied by bruising of the muscles and joints, imitates this fracture; while, on the other hand, the same cause may produce an actual solution of continuity, and yet the patient be able to run and walk. It is thus that persons have been known, after they had fractured the neck of the femur, to be able to reach home without presenting any shortening: it is thus that displacement of the fragments does not take place till after some hours, or even many days, either in consequence of some movement on the part of the patient, or of the examination made with a view of ascertaining the nature of the malady. Before we proceed, let us say a few words with regard to the cause of this consecutive displacement.

Secondary displacement.—It is known, that at the first period of its formation, the callus of long bones often yields, and produces deformities, when a perfect cure has been expected. Who has not seen oblique fractures of the femur give way under weight imposed upon it when the patient began to walk again, at a time when all risk seemed to be at an end? The same thing happens in fractures of the neck of the femur. At the end of two or three months the provisional callus yields beneath the weight when the patient rests upon it, and shortening is the result. I have seen this at the end of two, three, and four months. It is therefore necessary that patients should be controlled by the proper apparatus, during 100, 120, or 150 days, or even more.

The weight of the limb, and still more that of the body, on the broken part, is to be regarded as the great cause of displacement, whether primitive or consecutive. But another active power in producing displacement consists in the prolonged action of the cause which has given rise to the fracture. It sometimes happens that it buries the upper fragment in the thickness of the spongy tissue of the superior extremity of the lower fragment, and consolidation takes place in this situation rather quickly. Numerous anatomical preparations in the museum of the Hotel Dieu exhibit this phenomenon, and sufficiently demonstrate the reality of its existence. Lastly, there exists another cause of displacement in fractures in the neck of the femur,—namely, muscular action.

The primitive symptoms take place when, in a fall upon the heel or the knee, the shortening and displacement take place at the moment. In this case it is clear that, the upper fragment remaining in its place, the lower one is pushed up by the weight of the body. But a vertical fall is the least common cause of fracture of the neck of the femur; and when, as is most common, the blow is received on the trochanter, the cause tends not to shorten but to lengthen the limb. There exists, then another cause of this shortening, which has until now been but little understood. It depends upon the adductor muscles, which, being designed to carry the limb outwards when it has rotated, are inserted on one side in the ischium, and on the other terminate behind and along the linea aspera of the femur. It

is on these that the displacement, and, in part at least, the shortening depend.

When there is displacement, the fracture is always easily recogized; but when this is not the case, the nature of the mischief may be suspected—without, however, being placed beyond doubt. I suppose that the symptoms are well characterized; that there is shortening, dispacement of the limb outwards, and inability on the part of the patient to raise himself: it is necessary then to inquire if the limb preserves this shortening, or may be made to lose it by extension, and if the great trochanter turns on the axis of the femur, or on the extremity of the lever.

If the shortening is only some lines, it is difficult to distinguish it from that which is produced by an upward movement of the pelvis, caused by the contusion: the diagnosis becomes more evident if it extends to half an inch or more. Displacement, however, may also depend on luxation of the head of the femur, or upon an ascent of the pelvis. In luxation forwards, the head of the femur passes on the horizontal branch of the os pubis—then there is shortening; but the cause is detected by the hard tumor which may be felt to roll when the femur is moved. In luxation into the sub-pubic region the member is also turned outwards, but it is elongated; and there is in this situation an enlargement and unusual tension of the muscles.

In luxation upwards and outwards, the head of the femur is in the external iliac fossa; the limb is shortened, but the point of the foot and the patella are turned inwards, the heel being thrown out.

There is, finally, a luxation downwards and backwards, which I have only observed two or three times: the limb is then turned inwards, and sometimes a little elongated, and it cannot be brought into its ordinary state except by the effort of reduction, and, once reduced, the displacement does not again recur. Thus, the distinctive character is as follows:—shortening produced by a fracture yields to the smallest effort at elongation: shortening produced by a dislocation is more difficult to remove, but, once reduced, the deformity disappears.

Let us now enquire what are the material effects of these fractures upon the bones, beginning with the glenoid cavity. I have found this cavity driven in several times by the head of the femur: this accident was produced by a fall on the feet or knees. In this case, the head of the femur impinges with violence against the bottom of the cavity, and, being the more resistant, breaks it. The most remarkable case which I have observed was this: the bottom of the glenoid cavity had been driven in, and the head of the femur, which remained entire, had passed completely into the pelvis; the neck, which had not experienced any solution of continuity, was so firmly locked in this accidental opening, that it was very difficult in the preparation to disengage it, and thus reduce this new kind of dislocation. In other cases, the cotyloid cavity is broken without the head of the bone being displaced; but the most

common effect of the fracture is to be seen at the upper extremity of the femur in the radiated comminution of the head of the bone, the neck remaining entire. The most common cause producing this accident, is a gun-shot wound acting directly on the part; though it also arises from falls on the great trochanter, and even on the soles of the feet.

The neck, however, is much more frequently the seat of fracture, because it forms a lever. Its diminished size towards its middle part also contributes to the production of the fracture. This may take place from below upwards, or from above downwards, depending upon the manner in which the fall occurs; but usually it is at the base of the neck that the fracture takes place: there are, however, infinite varieties in this respect.

M. Dupuytren's Opinion of Sir Astley Cooper's Views.—I request you to observe, that according to the seat of these fractures they are called intra-capsular, or extra-capsular; and it is a distinction which has been much dwelt upon, because many practitioners think that it is difficult, or impossible, that the consolidation of the fracture can be effected when it has taken place within the capsula; while they admit that it is possible, and even easy, when it has taken place without the capsula. Astley Cooper, whose authority is so imposing in surgery, says expressly, that in all cases of transverse fracture of the neck of the femur within the capsular ligament, which he has had occasion to examine, he has never found bony callus; and he is persuaded that it is impossible; he has also made experiments upon living animals, which have confirmed him in his opinion; and the English surgeons have equally adopted the doctrine of their countryman.

But to the facts which they adduce in support of this non-consolidation, numerous facts of an opposite nature may be advanced. A considerable number of anatomical preparations show intra-capsular fractures exceedingly well united; and those which exist in the cabinets of the faculty at Paris, and the school at the Hotel Dieu, prove that this consolidation, with or without deformity, is real. Sir Astley Cooper has probably only seen fractures of the neck of the femur which have not been cured, which have been treated ill, or not treated at all. This is the only way of explaining the opinion of the English surgeon, which is evidently erroneous. An examination, however, of these anatomical preparations, though evidently calculated to convince us of the reality of this union of fracture within the capsule, does not appear to have produced this effect on the other English surgeons who have visited our museum. Mr. Cross says he has attentively examined the preparations in the School of Medicine at Paris, and that none of them appear to him calculated to prove that bony union ever takes place, when the head has been completely separated from the capsular ligament. When one has seen the preparations at the Hotel Dieu, which every person may examine at leisure, if he then denies the possibility of consolidation within the capsule, of a surety I know not of what nature the proofs would require to be to produce

conviction. For myself, I regard this consolidation as demonstrated, despite of what the English surgeons say.

Of the indications of Cure in Fractures of the Neck of the Femur.—At first sight one might suppose that it was the same in fractures of the neck of the thigh-bone as in other solutions of continuity—that it was sufficient to replace the fragments and maintain them in contact. But how many difficulties present themselves? How are fractures of this kind to be reduced? Are we to use powerful extension and counter-extension? Certainly not; because we should thus increase the tension of the muscles, which are already very great. In luxations this may be effected by diverting the attention of the patient, and seizing that moment to produce the reduction. But in fractures this cannot be done, because the attention of the patient is concentrated on the injury. Another method of overcoming muscular action is to place the limb in a state of flexion, as recommended by Pott in fractures generally. I believe I am the first who applied these rules to fractures of the neck of the femur. I suppose, that, in a case of this kind, extension and counter-extension have been used: it is evident that, if the limb be placed in a state of flexion, no difficulty is experienced in overcoming the displacement as to length and turning. But how are the fragments to be kept in contact? I suppose that the fracture of the neck of the femur is transverse, and that this part is divided into two halves; it may then easily be reduced; but the difficulty is to maintain it so, because the fragments are not placed fronting each other. Suppose, now, that the fracture is oblique; if the patient attempts to walk, the lower fragment impinges slightly upon the upper one: this fragment, then, will offer some obstacle to its displacement; so that this is less easy than in a perpendicular fracture.

The general indication, then, is to reduce the fragments, and keep them in contact; and the principle established by Pott fulfils this purpose, by preventing the muscles from contracting; but, in order to obtain consolidation, it is necessary to employ at least twice as long a time as in fractures of the body of the bone; while it is necessary to add twenty, thirty, or forty days more, in order to obviate the risk of displacement occuring when the patient begins to walk. If this treatment be pursued, I venture to assert that secondary displacement scarcely ever occurs.—that, when it does happen, it is extremely slight.

The best method of effecting reductions of fractures in general, and that of the neck of the femur in particular, is to diminish the resistance of the muscles, by placing them in a state of relaxation or demi-flexion, as you see us do every day, in the following manner:—The patient being laid on his back, and his pelvis fixed by means of assistants, the thigh is bent on the abdomen, by raising it, and making moderate traction; the limb is also bent upon the thigh. Scarcely is this done, when, without difficulty and without effort, the limb resumes its ordinary length, and the foot its natural direction.—*From the "Leçons Orales," published periodically, under the Baron's inspection.–Lond. Med. Gaz.–Bost. Med. and Surg. Jour.*

19. ***On the Prevention of Uterine Hæmorrhage, Post Partum.***—By Dr. Beatty.—In our esteemed contemporary of Doublin, for January of the present year, there are some "contributions to midwifery" —(a somewhat equivocal term, by the bye, from the fertile soil of the Emerald Isle)—by Dr. Beatty, consulting accoucheur to the Baggot Street Hospital, Doublin. The one which we shall now notice is on a very important subject. Uterine hæmorrhage, post partum, is a formidable accident. The gush of blood, on such occasions, strikes terror into the minds of all. The loss of the vital fluid, in the greatest operations, is comparatively trifling to this. It would seem that the parturient woman bears better an excessive hæmorrhage than any other individual—probably in consequence of the habit so long sustained in the system, of devoting a large portion of blood to the purpose of utero-gestation. Still there is a limit to this tolerance of hæmorrhage, beyond which a female cannot go in safety, though some bear a much greater loss than others. This hæmorrhage can result, according to our author, from one cause only—viz., a patulous state of some or all of the great uterine sinuses, in consequence of want of contraction. "The only remedy for this is a proper contraction of the fibres through which these vessels pass obliquely." Uterine contraction, therefore, is the only protection against uterine hæmorrhage; and will always be effectual except in cases of morbid adhesion of the placenta. The best means of effecting this contraction, according to Dr. Beatty, is direct stimulus by external force, viz. grasping, friction, and firm pressure over the pubis. Dr. B. says that this was the practice pursued by his father, with great success, during a long practice of 45 years. He does not wish, however, to discard other assistance, as cold, &c. He only desires to place the above means in the first rank.

"Early impressions are very lasting, and therefore I have a vivid recollection of the first case of serious uterine hæmorrhage I ever witnessed. I was called in the middle of the night to a patient, who had been attended by a very young man, a student of midwifery. The labor had been natural and easy; but after the birth of the child, and before the expulsion of the placenta, a deluge of blood escaped; and when I arrived, there was not only a sea of it under the patient, but also a stream along the floor, that had issued from the foot of the bed. I found the attendant pale as a corpse, and almost frightened to death, with a bucketful of water beside him, and numerous cloths soaked in the same, which he diligently applied to the external parts; notwithstanding which, the bleeding still continued. The woman was blanched, the pulse failing at the wrist, she was tossing her arms about, and crying out for more air. On passing my hand over the abdomen, and feeling the uterus large and flaccid, I immediately exerted all my force, in grasping, and firmly pressing this organ downwards into the pelvis, and very soon found it contracting forcibly under my finger. At this moment a rush of coagulated blood took place, which nearly extinguished the little remaining spark of life in the attendant, but was a matter of great consolation to myself, as I took it as a token of having

succeeded in my endeavors. In this I was not deceived; the uterus had fairly contracted, and the hæmorrhage was at once arrested. I kept up the pressure on the uterus with my left hand, and passed the forefinger of my right into the vagina, to ascertain the state of the placenta, which I found now lying loose in that passage, from whence, after having put on a tight binder, it was easily removed. The woman recovered; but she had lost so much blood, that some days elapsed before she could be pronounced out of danger."

Dr. B. conceives that, in the foregoing case, the introduction of the hand into the uterus would have been productive of greater loss of blood than the procedure which he employed. If, however, he had found the natural contraction of the uterus insufficient to expel the placenta, he would then have had recourse to extraction.

As we cannot prognosticate whether or not hæmorrhage will take place, post partum, it is better to guard against its occurrence. "This is attained by making the uterus perform the whole process of expelling the child itself, even to the feet; and never, by any injudicious haste, assisting the delivery by pulling the child."

"A practice pretty generally employed in this city, and lately taken notice of by Dr. Maunsell, is of great utility in this part of the process; that is, after the expulsion of the shoulders, to place the left hand on the abdomen of the woman, and follow the uterus by firm pressure, until the whole child is expelled. After this has taken place, if the child be alive and cry, the right hand, which had been employed in supporting its head and body, may now be disengaged, and the child laid in the bed, until more important matters are attended to. The chief of these is the proper application of an appropriate binder, previously passed loosely round the body of the woman. This I consider a very important part of the treatment, for it at once insures an equal and firm pressure on the uterus, and prevents its subsequent relaxation; while it leaves the practitioner at liberty to attend to the child. But the kind of binder usually employed, is very ill calculated to accomplish this end. It is commonly made of some straight narrow material, as a folded towel, a piece of linen, or what is still worse, of flannel, any of which it is utterly impossible to apply in such a manner as that it shall keep its place, and exert the uniform pressure which is so desirable; as from the shape of the woman's body, it must slip over her hips, and it finally runs into a simple cord round her waist, no matter how broad it may have been, or how accurately it may have been at first fastened.

"To obviate this difficulty, I make all my patients provide themselves with a binder, according to a pattern which I have constructed, and have found of the greatest use and convenience. It is made of jean, or twilled calico, doubled, and broad enough to reach from the eighth or ninth rib to the trochanters; with two long triangular pieces, termed in milinary, gores, let in to enlarge the diameter below, and fit the hips, just as female stays are made. It is furnished with a row of buckles arranged along one end, and at the other with a corresponding number of straps, made of the same material as the binder. The

straps are about seven inches long, and are sewed, not to the edge, but about seven inches from it; so that when they are passed through the buckles, the floating portion passes under the opposite end, and protects the skin from pressure. A very thin piece of whalebone, one-third of an inch broad, is inserted, so that when the binder is applied, it runs straight down the middle of the abdomen from the thorax to the pelvis. A bandage such as this fits easily, without any unequal pressure when drawn tight; never shifts its place when made well, and properly applied; and effectually accomplishes the object for which it is intended. I have employed it with several ladies who had been in the habit of using the common kind, and they invariably express the greatest comfort from its use."

As soon as the child is expelled, and when the uterus is felt to be well contracted, the binder may be tightened. It is best to begin with the middle straps, and proceed regularly downwards, after which the upper may be secured. The course thus pursued is admirably calculated to prevent the occurrence of the hour-glass contraction—and the best security against the insidious, and too frequently fatal accident, relaxation of the uterus after delivery, accompanied by internal hæmorrhage.—*Med. Chir. Review.—Bost. Med. and Surg. Journal.*

20. *On the Effects of Mammary Irritation in Amenorrhœa.*—By Charles Patterson, M. D.—Mary Reardon, æt. 24 years, of moderately corpulent habit, was admitted into the Rathkeale Hospital on the 10th of August, 1832. She laboured under slight synochial fever, which, in a few days, yielded to venesection and purgatives. On the 19th August, symptoms, which were considered of a hysterical character, presented themselves, with pain in the upper and outer part of the right side of the chest. For the latter affection a small sinapism was prescribed, but from inattention of the nurse, it was made so large that it covered a considerable portion of the mamma. The sinapism remained on for half an hour.

At the visit on the following morning, the 20th August, Reardon complained that the right breast was exceedingly painful, the pain being very different in its character from that which she had before experienced. On examination, the whole side of the chest was found considerably swollen; there was slight diffused redness of the skin; and though the mamma itself was enlarged to four or five times its natural bulk, yet there was no circumscribed hardness, nor any tendency to suppurative inflammation.

On the 21st August, the right mamma and adjoining parts of the chest, were found much more enlarged than they had been at the preceding visit. The left mamma and side of the thorax were unaffected, and it was announced by the nurse, that the catamenia had that morning appeared, and were then present in considerable quantity.

The discharge, which, as the patient stated, had been for two years and a half wholly suppressed, continued to flow for two days; then it began to decline, and with it the tumefaction of the mamma gradually disappeared.

My attention having been thus accidentally directed to the practicability of exciting the torpid functions of the uterus, through mammary irritation, I availed myself of the next opportunity presented to me of again observing the effect of that operation.

Catherine Power, æt. 19 years, applied to me the 14th September, 1832, she complained of headache, languor, loss of appetite, and inability to attend to her usual business, that of a servant. She stated that about the middle of April, the menstrual discharge being then present, she incautiously exposed herself to cold in washing clothes at a river. The catamenia then suddenly ceased, had not since returned, and from that period she had been constantly subject to ill health. She had consulted different medical gentlemen, and taken a great variety of medicine with little advantage.

I directed that the clavicular half of the right mamma should be covered with a sinapism. It was allowed to remain on for thirty minutes; and on visiting her in six or seven hours after its removal, I found the whole right breast considerably swollen, hot, and painful. The next morning the enlargement of the mamma was very much increased, the tumefaction having extended to the clavicle and axilla of the irritated side. There was no hard circumscribed or prominent tumor, but a painful diffuse elastic distention of the mammary gland and surrounding cellular substance. On the evening of the day next succeeding the application of the sinapism, this poor girl, with much joy, reported that the catamenia had appeared. The flux having continued for two or three days in moderate quantity, she then found herself greatly relieved of the headache and other most distressing symptoms; and in a week her health was so far restored, that she ceased to require any further attendance.

In both these cases cold evaporating lotions and gentle saline aperients were employed to moderate the local phlogistic engorgement. Both patients have since continued to menstruate at the regular periods.

From the facility with which the menstrual flux was induced, in the preceding cases, it would seem that the beneficial effects, in amenorrhœa, lately observed to arise from the long continued daily application of one or two leeches to the breasts, were entirely owing to the great irritation which the leech bites had eventually produced in these organs. The abstraction of blood by leeches from the mamma, had not, according to the reports of the cases in which they were employed, the least perceptible influence over the uterine functions, until pain, heat, and excessive tumefaction of the breasts had been first developed. Phlogistic engorgement of the mammæ being then the essential step in the movement, which, in these instances, determined the flow of the catamenial discharge, it must be obvious, that for the production of the necessary irritation to effect that engorgement, the simple application of a sinapism would have been, in every respect, infinitely preferable to the tedious and troublesome process of the daily repetition of leeching.

But it must not be supposed that mammary irritation is applicable to every form of amenorrhœa. I know that it will not be successful in every case, for I have found it to fail.

Mary Fitzgibbon, æt. about 21 years, of spare habit, was affected with headache, and irregular dyspeptic symptoms. The headache permanent, with occasional aggravation; countenance and tongue chlorotic; mammæ undeveloped. The menses had been scanty and irregular from the 16th to the 19th year of her age, but during the last two years they had been totally suppressed. No apparent organic impediment.

A sinapism was first applied to one breast, and afterwards a similar application was made to both breasts at the same sime. But though the sinapisms produced their ordinary effects, considerable pain and cutaneous irritation, yet the enlargement of the mammæ was very trifling, and there was no consequent uterine action.—*Dublin Jour., Nov.* 1833.—*Balt. Med. Sur. Jour.*

II.—ORIGINAL.

The Western Journal.

E Sylvis Nuncius.

CINCINNATI, JULY 1, 1834.

I.—OUR PUBLISHER.

Our Publisher, ever desirous of promoting the interests of his subscribers, has resolved on a measure, that will reduce the amount of postage on the Journal to one half. It is simply to print it on paper double the size of that heretofore used; so that, but half the number of sheets will be necessary, and consequently but half the amount of postage be chargeable. Many postmasters may not be fully aware of this change, until it is explained to them by our subscribers. The difficulty of obtaining enlarged paper has led to some loss of time in the issuing of this number, but the same cause of delay will not exist in future.

II.—OPERATIVE SURGERY OF THE EYE.

In a country where so few medical gentlemen devote themselves to the Operative Surgery of the Eye, it may be pardoned in one who has made some special preparation, by the importation of books and instruments, for that department of the profession, to make it known to his brethren. The EDITOR of this Journal, would, therefore, respectfully inform such of

his brethren in the Valley of the Mississippi, as do not operate in diseases of the eye, that he has paid considerable attention to that part of surgery, and is prepared with the requisite instruments, for every operation which is usually performed on that organ.

Those which he has had occasion to perform are extirpation of the eyeball and of encysted tumours from the orbit; the removal of ectropion and entropion; petyrgium; fistula lachrymalis; cataract, by laceration, depression, projection into the anterior chamber, and extraction; staphyloma, artificial pupil, &c. &c.

III.—Cultivation of Medicinal Plants in Ohio.

The society of *Shakers* at Union Village, Warren County, Ohio, cultivate and prepare a variety of medicinal plants—native and exotick. This is a branch of horticulture in which the profession is interested, and the industrious and orderly community who have undertaken it, deserve encouragement. Orders to be directed to A. C. Houston.

IV.—Truss for the Permanent Cure of Hernia.

We have lately been shown the model of a truss invented by Thos. Stagner of Kentucky, which, according to the testimony of several medical gentlemen, is adequate to the radical cure of Hernia. It acts, of course, by pressure. Inflammation is said to be thus excited, in the degree favorable to adhesion. We have not had an opportunity of witnessing its effects. A medical gentleman of Kentucky, Dr. Keith, will spend some time in Cincinnati this summer and autumn, to render assistance to those who may choose to apply.

V.—Proposed Medical Convention in Columbus, Ohio.

We have received from Dr. W. McClay Awl of Columbus,

a printed paper, calling a convention of the physicians of Ohio, in January next. We insert it below, and beg leave to commend it to the attention of our Ohio readers. As the objects which Dr. Awl and his friends propose to advance, by the projected convention, are of deep interest to the profession and to society, we sincerely hope it will be generally attended. We have applied the word profession, to the physicians of Ohio, but it is scarcely admissible thus to designate them. They are not united into a profession. With a few exceptions they are strangers to each other; without common objects, common sympathies, or common aspirations. The proposed convention, should the medical gentlemen of the state, generally, appear in it, cannot fail to make them much better acquainted with each other, and prepare them for concert of action, in whatever may hereafter call for it. The following is the printed circular.

TO ALL THE PRACTITIONERS OF MEDICINE AND SURGERY, IN THE STATE OF OHIO.

The undersigned, uniting in sentiment and feeling with that portion of the Profession who view, with pain, the great depression of character—want of harmony and concentration of useful action, which unhappily prevail in the Medical Science—acknowedging, also, a proper responsibility for the advancement of correct principles, the promotion of public benevolence, and the common welfare of society,—are induced most respectfully to recommend and consent to support a call for the assemblage of a General Medical Convention, to be holden in the city of Columbus, on Monday, the 5th of January, A. D. 1835.

The grand design is to organize for practical utility, the whole scientific medical power of the State. All regular scientific Practitioners of Medicine and Surgery, either of city, village, or country, who are disposed to advance the honor and dignity of the profession;—every one who has a heart in the cause of science, and is ready to unite with the great and good of the age, in elevating the moral and scientific character and talent of the great and extending West, is cordially invited, and expected to come and record his name in this Convention.

The regulation of professional etiquette—

The construction of independent Medical Societies—

The support of a periodical Journal of Practical Medicine—

The erection and location of public Asylums, for the reception of Lunatics and the instruction of the Blind—

The promotion of the Temperance cause—

The regulation of Vaccination—

The convenient supply of the Leech—and many others subjects, will perhaps claim the attention of the Convention. But as the whole proceeding should be an independent and voluntary offering for the common good, all are expected to be unpledged, and none should come entirely unprepaired.

VI.—Catheter and Sound.

Dr. Drake,

Dear sir,

I was glad to receive your hint, regarding the use of the words grooved catheter, &c. employed in my essay on lithotomy, in your last number. I confess, I should have reflected, that the subject was intended to be submitted to American judgement, and that, of course, the technicalities should conform to the meaning in vogue among American and English writers and readers.

The word *sound*, from its evident import, imples an instrument intended for determining whether a stone is or is not present in the bladder, in a manner analogous to sounding the bottom of the sea, to ascertain its nature, depth, &c. In this country, we so understand the meaning of the word, and employ the sound when grooved as a director.

The word *catheter* would seem to have a more *vague* derivation from the Greek word, signifying *to plunge*, or *thurst into*, which would equally apply to any instrument made to pass into the urethra, although we are accustomed to confine its signification to hollow tubes, destined for the evacuation of urine, when patients are unable to void it. It would, however, appear, that *according to the strictness of language*, we might make use of the word *catheter* as a *generic term*, including the hollow tubes just mentioned, as well as sounds, bougies, &c. And so it is universally admitted in France, although, at the present day, in that country, it is *almost exclusively* applied to designate the instrument used for the direction of the cutting instruments, &c., in lithotomy.

I went to that country with our national prepossession (if I may say so) for our own understanding of the *specific mean-*

ing of the words *catheter* and *sound*, and with the idea that they were every where so understood; but I soon found that we took *contrary sides* as to their application; and that although the *indiscriminate* use of them was there tolerated, still the word catheter was *almost universally* understood as sound is here, and vice versa. Long habit of confounding terms (at least these two) when listening to French verbal instruction, as well as in French reading, must be offered as an excuse for occasional technical gallicism.

For the benefit of such of the readers of the Journal, as are not aware of the difference of acceptation, I will subjoin a translation of the definitions, as given by J. Cloquet, in the Dictionnarie de Medecine Chirurgie, &c., of these two words as indicative of their present application in France.

"Catheter. (Catheter s. m. *katheter* from *kathienai* to plunge or thrust into.) An instrument that is introduced into the bladder, to evacuate the urine contained therein, *to ascertain the presence of calculi*, to inject various fluids, *to guide the lithotome in the operation for stone*, and lastly, to dilate the canal of the urethra. Various kinds of catheters have been distinguished;—*solid* and flexible catheters, called bougies; catheters which are *hollow* in their whole length, and which are called algalis, or sounds; lastly, the *word catheter*, appears, at the present day, to be *almost exclusively confined* to the *solid* instrument employed in the operation for stone. This instrument is a *solid*, grooved sound, straight at one of its extremities, which is flattened out for the purpose of holding it more firmly, and having an elliptical curvature towards its other extremity. It is made of steel, that it may invariably preserve its curvature, and, at the same time, to allow the lithotome and bistoury to pass along the grove, without danger of interruption from cutting into the metal, which might happen, were it made of a softer material. The groove extends along its convexity to within three or four lines of its extremity, and should be perfectly hollowed out.

Sound. (Specillum, *mela* of the Latins, *mele* of the Greeks.) A surgical instrument which is introduced into the cavity of

certain organs, into the tracks of wounds, of fistulæ, &c., to answer divers therapeutic indications. Also to ascertain the condition of the bladder, to evacuate the urine it contains, and to verify the presence of foreign bodies, &c. Surgeons ordinarily employ *hollow* sounds made of silver, whose length, diameter, form and curvature vary according to the age, or sex of the patient, and the circumstances of each case. They are frequently enough called *algalis*. The back or extremity, by which the sound is introduced, is ordinarily blunt, some times conical, and provided on the sides with two openings called the eyes. The other extremity (*le pavillon*) is more enlarged, and has two rings attached to it, which allows the instrument to be held and directed with more facility. A stilet of silver (*le mandrin*) fills the cavity of the sound, and serves the double purpose of keeping the interior clean, and of preventing the escape of urine, when it is suffered to remain in its cavity. For females, sounds less bent and shorter are employed, called *female sounds*. Most frequently sounds are made of gum-elastic, especially when they are intended to remain sometime in the urethra and bladder. In the divers operations practiced upon the urinary passages, surgeons likewise make use of *solid* sounds, firm and unyielding or flexible to which the names of *bougies* and *catheters* have been given."

In describing *French* operations, it is not astonishing I should call the instruments after the names universally in use in France; but as you are better acquainted with what will answer the generality of American readers than I am, I submit, to your better judgement, the use that may be made of the present communication.

Yours respectfully,

ANTHONY HERMANGE.

Cincinnati, June, 1834.

VII.—The Locust.

The locust, the devastations of which are recorded in the Scriptures, is a kind of grasshopper, belonging to the order

Orthoptera, characterized by the presence of Maxillæ and mandibles or jaws for mastication, and of wings which are folded longitudinally. There are several species of locusts, (Gryllus Linn.) which were a plague as well as food to man in Asia and Africa. They now, as of old, elevate themselves high in the atmosphere, and are freqently borne by currents of air to Europe, where, in a few hours, the destruction produced by their appetite for leaves, is followed by the contamination of the air, occasioned by the myriads of their dead bodies heaped on the desolated soil. At this day they are eaten by man, as well as in the time of St. John. A kind of meal is made of them after being dried, and they are also pickled in such quantities as to render them an article of commerce.

The locust, so called, which has appeared in this country this season, belongs to the order Hemiptera, in which the bedbug is found, and which is characterised by having neither mandibles nor maxillæ or jaws, but a *Rostrum;* and consequently the insects of the order are incapable of eating and committing the same kind of ravages as the Eastern fly. The name of locust, is, therefore, erroneous, and, as in many other cases, has given rise to many errors, which this paper is intended to correct. The true appellation of the insect is CICADA Linn. (Tettigonia Fab.) *Septendecim.* The Greeks called it *tettix* and *achetes.* Hence Fabricius took his name; but the name CICADA, the Latin word, should be retained. It occurs in Pliny, and in the following lines of Virgil, we find one of the characters of the insect truly and elegantly described.

> At mecum *raucis* tua dum vestigia lustro,
> *Sole sub ardenti resonant arbusta cicadis.*

The *cicadæ* suck the sap of the trees in their three states of larva, puppa, and fly. The females, by means of the ovipositor or sword which is contained in their abdomen, deposit their eggs under the bark of the branches which they saw longitudinally, from five to eight eggs are found in each incision, and a female can lay five or six hundred. White *larvæ* or worms are hatched from these eggs which do not ex-

ceed the size of a flea. They descend along the bark of the branches and stem and bury themselves in the ground, where they suck the roots of the trees at the depth of one or two feet; by the end of the first season, or the beginning of the next, they are transformed into the *puppa* state, having already the rudiments of wings, and fore feet which are strong, designed to burrow, and to climb the trees when they ultimately come out for their last transformation.

These remarks apply to the many species belonging to the genus Cicada. We have here several which appear every year, one of which is common and much larger, making a very similar noise. As to the seventeen years locust, as it is commonly called, little is known concerning the long period during which it remains under ground. The writer of this article, never saw one of those insects, but when they appear in a vast body; but he has seen the myriads in New-York, in North Carolina and in Ohio, in the space of nine years. Dr. J. Locke of this place, showed him the puppæ of the seventeen years locust, which were found near the surface of the ground, more than six weeks before the perfect insect appeared, and there seemed to be a general anticipation that this was to be the year of their periodical visit; but the writer is not yet convinced, by any printed account of their appearance, that seventeen, or eight, or seven are the number of years which are necessary to complete the subterranean existence. It is evident that they are not a migrating insect like the *Locusta* of the East, and that the swarm which we have now, cannot be the offspring of the one, for instance, which appeared four years ago in North Carolina; but did the locusts really show themselves last in 1817, in this place? When that fact is proved by print or notes made at the time, the writer, who has no kind of objection to believe it, will be at once convinced. The havock committed by the true locust of Asia and Africa, has led many to believe that the leaves of many trees, which were injured by the late frost, were eaten by our obstreporous visitors. Let them examine the proboscis of these insects, and they will be convinced that they cannot devour vegetables

much better than the bed-bug could grind corn or hickory-nuts. The damage done to the young twigs by the insertion of the eggs, is not very material, and is the only harm which can be produced by them. As to the stench which might be produced by their dead bodies, other insects, birds and hogs are more than sufficient to preserve the purity of our atmosphere in that respect. N. M. HENTZ.

Cincinnati, June, 1834.

VIII.—Summer Residence for the Consumptive.

Princeton, N. J. 23d *May*, 1834.

Dr. Drake,

Dear Sir,

Since I enjoyed the honor of your public and private instruction in 1826–7, I have indulged my favorite propensity of travelling; always uniting my excursions as much as possible with my medical pursuits. In 1829 I visited Yucatan, one of the United Mexican States, where I have resided nearly ever since. Campeche (my residence) has a clear, dry and salubrious atmosphere, and is remarkably healthy, notwithstanding the culpable neglect of the police. There is no winter, and it is very seldom the thermometer falls below 64°. There are no marshes in the vicinity, and atmospheric vicissitudes are gradual and not very considerable: hence febrile and catarrhal affections are rare, unless brought on by undue exposure to rain or the intense rays of a tropical sun.

These circumstances induce me to think that this would be a valuable winter residence to those of our unfortunate countrymen predisposed to, or laboring under phthisical affections, and, in fact, persons of delicate health from whatever cause. Living is cheap, and the market pretty well supplied, and the climate milder than that of the Island of Cuba or the South of Europe, and the expenses are not the third part as much as in the former places. A difficulty, however, exists: The language, religion and manners of these people, are different

from ours, which prevents those friendly offices which ought to exist between the host and his guest. It is hence an inquiry of importance, whether a suitable substitute can be found within the limits of our own country. Is there any part of these United States combining the mild and salubrious climate of the tropics, with the beneficient influence of our free institutions?

In my return from Campeche, I visited Key-West and Cape Florida, on an exploring tour; I was careful to inform myself relative to the soil and productions; but especially relative to the climate. From all I can learn, Cape Florida enjoys a very mild and grateful temperature during the whole year. Frost is entirely unknown. The most delicate plants vegetate perfectly well in the midst of January. I saw at Cape Florida ripe corn, corn silking, and corn just sprouting through the ground, in the month of February. The plantain, banana, and papaya, which require a year to ripen, grow there to great perfection. One might suppose, from its latitude, that Cape Florida would be colder than the Havana; but when it is recollected that there are no elevated lands in the vicinity, and that the prevailing north winds sweep for hundreds of miles the surface of the heated Gulf stream, it is readily seen why the atmosphere is as mild or even milder than that of the great Emporium of Cuba. Cape Florida will ultimately be the Italy of our country. Its warm and salubrious atmosphere far excels the damp and chilling breezes of St. Augustine and the south-western states: It far surpasses the farfamed Languedoe and Leghorn: Its waters are clear, pelucid and wholesome: Its rivers abound with fish and fowl, and its woods in game: Its trees yield cooling and refreshing fruits; and even the piny barrens, so sterile elsewhere, yield a root in great abundance (Compti or Florida Sagoplast) from which is extracted a beautiful and nutritious aliment, equal to the best Indian arrowroot. The whole abound in good pasturage, well situated for the growth of live stock, with a very trifling expense. Difficulties, as yet, attend the settling of this country. The Spanish Grants are not yet adjusted, and the Government

lands have not been surveyed. Hence, most of the inhabitants are squatters who gain a precarious livelihood by fishing and hunting. Mr. Fitzpatrick, however, has purchased a large tract of land at the mouth of the Miami river, where he is actually engaged in opening a farm, preparatory to erecting a large edifice for the reception of invalids, and as Mr. F. possesses ample means it is to be hoped that much time will not elapse before he shall have completed his undertaking.

The survey and sale of these lands ought to occupy the attention of Congress at an early period: That suitable residences and provison may be made for all who from misfortune or from choice may wish to visit these sunny regions. Those who have lived long in that country, represent it as very healthy, fevers being scarcely known.

Many medicinal plants are already found, and doubtless more will be discovered, when these interesting regions shall have been sufficiently explored by scientific men. May it not also be converted into a site for the cultivation of medicinal plants and Botanical specimens, without the great inconvenience and expense of green houses? By placing the Cape Florida lands in market, we open a new source of wealth to our citizens, a vast theatre of scientific research to our philosophers, and we secure any asylum for our unfortunate friends, free from the chilling blasts of winter, and the more *chilling indifference* of "strangers in a strange land."

I would solicit your efforts in behalf of this section of our country, that the attention of the profession may be called to a subject in which a large portion of invalids are deeply interested.

Very respectfully, your friend
and former pupil,
K. McKINNEY.

IX.—Case of Poisoning by Datura Stramonium.

Communicated by Dr. B. F. Williams.

In the summer of the year 1832, about 9 o'clock P. M., I received a call to visit Ann Maria O. æt. between 6 and 7

years, of a delicate nervous constitution, hereditarily predisposed both to phthisis and epilepsy; of the latter of which diseases she had suffered several violent attacks, which usually seemed to be brought on by gastric or gastro-enteritic irritation, rather than any original morbid cerebral action, for in common the exhibition of an emetic or an emetico-cathartic, speedily allayed the paroxysms and restored the various functions.

On arriving, I found Dr. A., my former Preceptor, there, who had administered an emetic of Ipecacuanha, on the supposition that she was laboring under an attack of epilepsy "her old complaint."

She had vomited little—appeared much agitated—seemed somewhat delirious—stared and looked wildly—muttered incoherently—her superior extremities were in constant and rapid motion, as were the inferior, though less so. Upon raising her into a setting position, she permitted her head to fall back, threw out her arms and endeavored to lay hold of something to prevent her from falling backwards, and seemed vertiginous as one who had been whirling rapidly on his feet.

A feather was thrust into the throat to tickle the fauces and assist the action of the emetic, but nothing was discovered in the ejected matter, (which was some warm water and the Ipecacuanha which she had taken,) that could have given rise to such distressing symptoms.

Upon further inquiry it was ascertained that about six o'clock P. M., she came from play—complained of weariness—lassitude—wished to sleep—felt slight nausea—said it was "so dark she could not see well"—rubbed her eyes with her hand—complained of pain in her forehead—and had some slight muscular tremors in her upper and lower limbs and face.

Upon opening the eyelids, the pupils were discovered enormously dilated—the iris being drawn to the ciliary ligament so closely as to measure less than half a line in width. A bright lamp was then brought near the eye and so placed as to fall directly upon the axis of each, yet the glaring vividness of the light produced not the slightest effect upon the retina, the pupil remaining rigidly dilated, and totally insensible to its natural stimulus.

It was then suggested that the patient might perhaps inadvertantly have eaten of some of the noxious plants known to grow spontaneously on the commons throughout the neighborhood, and the symptoms were highly favorable to such a supposition. Nothing satisfactory upon this point could, however, be collected. She was ordered an infusion of green tea as a drink—a pediluvium—draughts to the feet—and cold water occasionally applied to the head, through the night.

Morning, 6 o'clock.—She was costive—had passed a restless night—no palliating effects from the remedies—muscular motions much increased—eyes wide open—wild—remaining totally insensible to light. In addition, it was discovered that she was also perfectly insensible to sounds, as several attempts were made to rouse and arrest her attention by this means but failed. She was constantly tossing her arms from side to side—sometimes appearing to tie and untie her bonnet, and to take it off—to hold up a book and read and spell—then, as if threading a needle, or catching at something in the air—picking berries and eating them—throwing sticks, and then ceasing suddenly all muscular movement for a moment—then calling aloud—whispering, laughing, crying, and talking to her playmates, all in the same breath.

Learned this morning, that she had, while in company with several other children yesterday-afternoon, amused herself with the young capsules of the Stramonium, and had chewed some of the green seeds; but whether she had swallowed any, could not be ascertained.

That the case was one of poison by the article named, was now beyond a doubt. But as she had already taken an emetic, in the commencement of the attack, without any particular or manifest advantage, it was deemed inexpedient to have recourse to that remedy again;—for, 1st. there was nothing, perhaps, to be gained by evacuating the stomach at present, and 2nd. there was a doubt whether, under the cephalic excitement, the stomach would be sensible to the impression of an emetic, and 3d. if the emetic should succeed, its prostrating effects might, under present circumstances, prove greater than the vital powers could sustain.

It was now proposed to employ a cold bath composed of vinegar and water, several times through the day, as an antispasmodic, which, together with its admitted antidotal effects in cases of vegetable poisoning, seemed to point it out as an agent peculiarly serviceable and appropriate in the present case,—and to administer a tablespoonful of a strong infusion of coffee alternately with the same quantity of sweetened vinegar and water every half hour. For the bath, however, mere sponging with vinegar and water, once an hour, was substituted.

4 o'clock, P. M., symptoms unabated—no evacuations from the bowels—no nausea—same prescription continued.

9, P. M., seemed less violent—has occasionally short intervals of repose—wakes more violent, but soon relapses to her former state. I remained during the night. About 2 o'clock in the morning had an hour of tranquil sleep—waked but seemed less violent and delirious than before—this was followed in two hours by a profound sleep almost approaching coma—waked in about an hour and a half—spoke, but we could not understand what she desired.

9, A. M. had fallen asleep soon after my departure, and not yet awaked—seemed quiet, save an occasional start and movement of the lips as if talking to herself.

12, M. had waked at 11, perfectly rational—pupils contracted to their natural size—could hear distinctly—said she had slept long—quite unconscious of what had passed—desired food.

From herself we now learn that she had chewed some of the seeds of the Stramonium, but had swallowed none.

She was ordered the following cathartic—

℞ Rhei. pulv. gr. iij.
Ol. Ricini. ʒii. mix.

repeated every two hours, till an operation was obtained—and a diet of rice—toast—boiled milk—and soup of chicken, for a few days.

Cincinnati, June, 1834.